ODP COUNCIL
AND
JOIDES EXECUTIVE COMMITTEE
15 - 18 June, 1992
Washington, D.C.

AGENDA

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(Chairperson: A. Maxwell)

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ODP COUNCIL
AND
JOIDES EXECUTIVE COMMITTEE
15 - 18 June, 1992
Washington, D.C.

AGENDA NOTES

Monday, 15 June 1992 (9:00 AM)

EXCOM Session: Past and Future Actions on Briden Report
(Chairperson: A. Maxwell)

EX-A. ***Initial Business***

1. Opening remarks.

Welcoming remarks, introductions of members and guests and comments about logistics.

2. Adoption of agenda.

The purpose of this special session of EXCOM in advance of its usual joint meeting with the ODP Council is to hear reports on considerations of the various recommendations of the Briden Report (EXCOM's *ad hoc* Committee on Long-Term Organization and Management of ODP) and decide on appropriate action(s). EXCOM will also consider actions arising from the recommendations of PEC III, particularly as these overlap with the Briden Report.

(Note: The recommendations of the Briden Report are included in these notes as modified by EXCOM in January. The full text of the Briden Report was included in the January EXCOM Agenda Book, but it is attached again to this Agenda Book for the benefit of members of the ODP Council. The PEC III Report, with responses of subcontractors, has recently been circulated to EXCOM by JOI, Inc. EXCOM members are asked to bring the PEC III Report with them to this meeting.)

Since the Briden Report was presented at the 14-15 January EXCOM meeting in Bonn, Germany, its recommendations have been under review by JOI, Inc., PCOM and an EXCOM subcommittee comprising C. Dorman (chair), H. Dürbaum and D. Falvey (the "Dorman subcommittee").

Actions requiring further consideration after this session will be brought up during the EXCOM session on 17 June.

EX-B. *Past and future actions on Briden Report*

1. Relation of ODP to international science.

(i.) ODP could benefit from regular open science meetings.
January 1992 action: 'EXCOM approved as reworded', as follows:

> "The sciences that are served by ODP could benefit from regular, open scientific conferences on the Scientific Contributions of Ocean Drilling. EXCOM asks PCOM to explore the advantages of holding them during IUGG General Assemblies, and ways of achieving feedback into the JOIDES advisory structure." (PCOM, J. Austin).

As mandated by EXCOM, PCOM considered the issue at its April meeting in Corvallis, Oregon. EXCOM members are referred to the PCOM minutes *(PCOM minutes, pp. 64-67, included with this Agenda Book)* for the full text of the discussion, but PCOM's general conclusion is that a third (perhaps modified) COSOD meeting is the only way both to gather the widest possible appropriate community together and to ensure proper feedback to the JOIDES scientific advisory structure. PCOM asks EXCOM both to organize (and budget for) such a meeting (or meetings), which could ideally come soon after the beginning of the next phase of ODP (i.e., late in 1993 or early in 1994).

PCOM did not consider it possible to organize "special" ODP sessions at regularly scheduled scientific conferences which would do more than is already being done to showcase ODP. The PCOM Chairperson reminds EXCOM that ODP results already figure prominently in thematic scientific meetings around the world. Furthermore, some meetings are dedicated exclusively to thematic summaries of ODP (e.g., the 1991 Cardiff, UK meeting on the Indian Ocean and the upcoming Monterrey, CA meeting on the western Pacific), and these result in (AGU, etc.) publications which should see wide circulation. PCOM will continue to urge its committee and panel members, as well as other ODP participants, to convene and attend such meetings as appropriate.

(ii.) Continue to develop bilateral liaison.
January 1992 action: 'EXCOM approved' (PCOM, J. Austin).

PCOM considers that it has already done as much as it can, following the leadership of JOI, Inc., to pursue bilateral agreements with: Global Sedimentary Geology Program (GSGP), Nansen Arctic Drilling Program (NADP), International Geosphere/Biosphere Program (IGBP), Joint Global Ocean Flux Studies (JGOFS), Federation of Digital Seismic Networks/Ocean Seismic Network (FDSN/OSN), InterRIDGE and Continental Scientific Drilling Program(s) (CSDP). A large part of PCOM's August meeting each year is devoted to information exchange with representatives of these companion programs.

PCOM suggests to EXCOM that ODP continue in this vein, and that no enhancements are necessary for the time being (unless and until other nationally-driven drilling initiatives get under way, when a major reorganization effort of the JOIDES advisory structure may be necessary).

(iii.) Rename program International ODP.

January 1992 action: 'EXCOM deferred action' (JOI, Inc./J. Baker).

2. Governance of program.

(iv.) Internationalization of JOI, Inc.

January 1992 action: 'EXCOM requested JOI to examine legal and practical problems and report back at next EXCOM meeting' (JOI, Inc./J. Baker).

(v.) Location of JOIDES Office outside U.S.

January 1992 action: 'EXCOM requested JOI to investigate financial and other implications and report back to next EXCOM meeting' (JOI, Inc./J. Baker).

(Coffee and tea 10:15 - 10:30 AM)

(Note: Prior to Agenda Item EX-B.3., EXCOM will hear a report from its "Dorman Subcommittee". The following headings have been suggested by the Chairperson of that subcommittee: (1) Responses to request for statement of interest, and procedures; (2) Findings and recommendations for 1993-1998; and (3) Findings and concur recommendations for post-1998. Following that report, EXCOM will discuss the remainder of the Briden Report recommendations, with specific input from Dorman subcommittee members, as outlined below.)

3. Role of subcontractors.

(vi.) Decentralization of science operator functions.
January 1992 action: 'EXCOM established Dorman subcommittee to consider' (Dorman subcommittee).

4. Tendering for subcontracts.

(vii.) Wireline logging.
January 1992 action: 'EXCOM deferred to Dorman subcommittee' (Dorman subcommittee).

(viii.) Science operations post-1995.
January 1992 action: 'EXCOM deferred to Dorman subcommittee' (Dorman subcommittee).

(ix.) Transfer of SEDCO contract.
January 1992 action: 'EXCOM deferred to Dorman subcommittee' (Dorman subcommittee).

(Lunch 12:00 PM - 1:15 PM)

5. JOIDES advisory structure.

(x.) Reconstituting PCOM.
January 1992 action: 'EXCOM requested Maxwell and Baker to establish *ad hoc* committee and terms of reference to review this as well as similar recommendation in PEC III' (JOI, Inc./J. Baker, A. Maxwell).

(Note: The terms of reference and candidate members of this committee are attached to this Agenda Book. EXCOM will have to examine and approve the terms of reference and nominate members to this committee at this meeting.)

(xi.) Review thematic panels' terms of reference and structure.
January 1992 action: 'EXCOM referred to Maxwell/Baker' (JOI, Inc./J. Baker, A. Maxwell).

(xii.) Reconsider basis of membership of advisory structure.
January 1992 action: 'EXCOM referred to Maxwell/Baker' (JOI, Inc./J. Baker, A. Maxwell).

6. Incorporation of new vessels.

(xiii.) Determine terms and procedures for incorporating new vessels in program.

January 1992 action: 'EXCOM deferred to Dorman subcommittee' (Dorman subcommittee).

(xiv.) Encourage PCOM to use vessels other than JOIDES Resolution.

January 1992 action: 'EXCOM approved and passed to PCOM' (PCOM, J. Austin).

PCOM has been actively considering the use of additional platforms since publication of the LRP in 1990. Most recently (April 1992), PCOM asked for and received bids from SEDCO/Forex to use such platforms at two candidate sites, one from the FY92 drilling schedule (MIT Guyot, western Pacific, Leg 144) and the other from the FY93 schedule (New Jersey continental shelf, Leg 150). Including mobilization/demobilization costs, the use of such facilities will run ~$1.8M (U.S.) or more in each case. With the number of international partners at present uncertain for the next phase of ODP, these funds do not appear to be available. Consequently, PCOM now looks to EXCOM for guidance in this matter.

(xv.) Determine scientific and technical requirements for new drilling vessels.

January 1992 action: 'EXCOM deferred to Dorman subcommittee and requested PCOM to consider' (Dorman subcommittee, PCOM/J. Austin).

PCOM's attitude at present is to maximize the capabilities of *JOIDES Resolution*, before proceeding to consider requirements for other vessels. With that in mind, PCOM has scheduled Leg 148 (January - March, 1993) as a further deepening of Hole 504B (now at 2 km below the sea floor) in order (eventually) to achieve a type section of oceanic lithosphere, and has committed to drilling a ~2.5 km deep hole in more than 5 km of water on the Galicia margin as Leg 149 (April - May, 1993).

At the same time, PCOM is developing an RFP for feasibility study of deep-drilling capabilities/facilities, in consultation with the Technology and Engineering Development Committee (TEDCOM) and ODP-TAMU. That RFP may be issued to external consultants later in 1992, funds permitting.

(xvi.) To go on record that multi-vessel program will mark new era.
January 1992 action: 'EXCOM deferred action to later date' (EXCOM).

(Coffee and tea 3:00 - 3:15 PM)

EX-C. *Actions on PEC III Report recommendations*

1. Revision of publication policy (PCOM, J. Austin).

PCOM purposely held off on this issue until the PEC III Report was published and circulated. Now, the PCOM Chairperson will direct the JOIDES Information Handling Panel (IHP) to look at the PEC III recommendations concerning publications and make a report/series of recommendations to PCOM, probably at its December 1992 meeting.

2. Improve public relations (JOI, Inc./J. Baker).

3. Shipboard overcrowding (ODP-TAMU/P. Rabinowitz).

4. Review of advisory structure (A. Maxwell/J. Baker). *(Note: see EX-B. 5. above)*

5. More proactive planning (PCOM, J. Austin).

The PCOM Chairperson considers that this is already occurring within the scientific advisory structure of ODP, for a number of reasons: (1) thematic panels are becoming more proactive by reexamining/rewriting their White Papers, appointing watchdogs to communicate directly with proposal proponents, issuing RFPs for important themes not represented by good proposals, and in some cases writing proposals themselves; (2) PCOM is encouraging inclusion of short-duration, high-priority science at an early stage of planning within the context of "leg-length" science, e.g., the recent inclusion of 1 day of Santa Barbara Basin drilling at the end of Leg 146 (Cascadia margin), to take advantage of a scientific/logistical opportunity; (3) the JOIDES Site Survey Panel (SSP) now advises PCOM/thematic panels on "drillability" of proposed science at an early stage, which helps in proposal ranking and expeditious flow of data from proponents to the ODP Data Bank at LDGO; (4) natural thematic "focusing" of ODP, simply because of the science now being scheduled by PCOM for drilling, e.g., long-term efforts to

study North Atlantic Rifted margins, offset sections of oceanic lithosphere, and sedimented and unsedimented ridge crests.

Nonetheless, ODP faces continuing charges that it is a "closed shop". Public relations appears to be (part of) the problem, but neither PCOM nor the rest of ODP's scientific advisory structure is configured for PR purposes. Hiring a full-/part-time publicist for ODP through JOI, Inc. may be the answer *(Note: see EX-C. 2. above)*, but the PCOM Chairperson's perception is that ODP can never be all things to all people. Perhaps everyone concerned with ODP should live with that (comfortably), while strengthening ODP's ties to other major international programs to reach parts of the earth sciences that ocean drilling cannot effectively tackle.

6. Improve low technician morale (ODP-TAMU/P. Rabinowitz).

7. Site-survey funding, effect on program (PCOM, J. Austin).

PCOM has adopted a four-year planning strategy, updated each year, specifically to alert international funding agencies to the needs of ODP for site-related geophysical/geological surveys. Furthermore, the scientific advisory structure is increasingly proactive in putting data-rich proponents together with those requiring such data, in order to construct more "mature" drilling proposals. The system as presently configured works well, despite the perception that only those near ships/seismic data acquisition and processing facilities can submit successful proposals to ODP. (They do have a competitive advantage.)

The PCOM Chairperson is more concerned that at present there is no facility within ODP to acquire site-specific surveys (for legs/sites already on the drilling schedule) for a variety of purposes (e.g., to solve shallow-gas safety problems on the New Jersey shelf. A lack of high-resolution, site-specific data could mean postponement of Leg 150, in the worst case.) Site-specific data needs are usually short-fuse, and can rarely compete effectively for funding with more regional surveys. ODP needs an "in-house" source of funds to solve problems of this kind *(Note: see EX-C. 8. below)*.

8. Contingency funding (JOI, Inc.).

EX-D. *Other business*

Adjournment time flexible. All business must be completed in order to permit adjournment of EXCOM Executive Session at 12:00 PM on Wednesday 17 June 1992.

Tuesday, 16 June 1992 (9:00 AM)

Joint Session of ODP Council and JOIDES EXCOM
(Co-Chairpersons: D. Heinrichs and A. Maxwell)

JS-A. ***Initial Business***

1. Opening remarks (EXCOM/NSF).

Welcoming remarks, introduction of members and guests at the Joint Session and comments about logistics.

2. Adoption of agenda.

The general order of business differs slightly from the order of the past few EXCOM meetings: (1) presentation of scientific results of Leg 143 (Atolls and Guyots I); (2) presentation of a set of reports concerning present program status, its recent past and immediate future, approximately through calendar year 1993; (3) consideration of, and planning for, the long-range future of ODP, primarily involving reports from the ODP membership, including status of ODP renewal. There should be time for transmitting information, discussion of important issues and identification of items for action by EXCOM on Wednesday, June 17.

JS-B. ***Summary of scientific results, Leg 143 (E. L. Winterer, Co-Chief Scientist)***

JS-C. ***Ocean Drilling Program - recent past, present and near-term future through 1993***

1. Advisory structure report (PCOM, J. Austin).

a. Summary of activities of JOIDES panels.

- JOIDES panels. Most have met once since the last meeting of EXCOM (January 1992) and twice since the last meeting of ODPC (July 1991). Thematic panels completed their reviews and rankings of proposals from any ocean and reported to PCOM for its April meeting. *(Note: The JOIDES Office will have both 1991 and 1992 global rankings maps available for inspection at this meeting.)* Service panels have answered PCOM questions and provided advice; some of their recommendations form parts of this report.

- Panel Chairpersons. Margaret Delaney (UC/Santa Cruz) became Chairperson of OHP prior to its spring 1992 meeting.

- DPGs/WGs. PCOM received the final report of the North Atlantic Rifted Margins (NARM) Detailed Planning Group and thanked and formally disbanded the DPG. Working Groups on Data Handling, Sea Level, Offset [Section] Drilling and *In Situ* Pore Fluid Sampling are still active.

b. Significant actions, April 1991 PCOM meeting.

- At its April meeting, PCOM developed a general four-year drilling plan though spring 1996 *(see below).*

- PCOM also prioritized engineering development items for ODP-TAMU *(see below).*

- In August, PCOM will receive detailed development plans/cost estimates for the Diamond Coring System (DCS) and upgrades to ODP computing environments (both shipboard and shorebased).

c. General direction of the drilling vessel, spring 1992 - spring 1996.

- Thematic ranking of programs as carried out by JOIDES thematic panels at their spring 1992 meetings are summarized by a table in this Agenda Book. *(Note: This table is directly related to the 1992 rankings map which will be on display at the meeting.)* The highest ranking proposals will be mentioned briefly to demonstrate to the ODP Council and EXCOM the range of candidates for drilling to the spring of 1996. PCOM used these rankings as the basis for its formulation of a four-year drilling plan in April.

- General direction of the drilling vessel, spring 1992 - spring 1996. After examining how each thematic panel ranked programs, discussing those top rankings, and seeing how programs were distributed geographically, PCOM approved the following motion unanimously at its April meeting:

  PCOM sets the direction of the drilling vessel for the next four years as follows:

000014 JOIDES Global Ranking 1992

Proposals ranked 15 or higher by at least one panel are mapped on the accompanying global chart and represented by ranking histograms; ranks 1-5 are represented by values of 3, ranks 6-10 by 2, and 11-15 by 1 (see "Histogram" column of this table).

Rank	LITHP	OHP	SGPP	TECP	Histogram
1	410--- Deepening 504B	388---- (NAP) Ceara Rise	* GENERIC * Gas hydrates	NARM-DPG (NAP) Non-volc. margins II	3
2	387-Rev/Leg147 Hess Deep II	NAAG-DPG (NAP) NAAG II	414--- N Barbados Ridge	346-Rev2 (NAP) E eq. Atl. transform	3
3	369-Rev/Add (NAP) MARK lithosphere	415----/403-Rev KT-boundary	405--- Amazon fan	NARM-DPG (NAP) Volcanic margins II	3
4	361-Rev (NAP) TAG hydro	354-Rev Benguela Current	391---- (NAP) Med. sapropels	323-Rev/399---- (NAP) Alboran Sea	3
5	TIE} GENERIC I Return to 735B	* 253-Rev * Pac. black shales	059-Rev3 MAP/Sed. instability	* 265----/265-Add * Woodlark Basin	3
6	I SR-DPG TIE} Sed. Ridges II	386-Rev California Current	409--- Santa Barbara Basin	410--- Deepening 504B	2
7	* EPR-DPG * E Pac. Rise II	404----/406--- NW Atl. drifts/climate	330----/Add (NAP) Med. Ridge	400--- Costa Rica acc. wedge	2
8	376-Rev (NAP) Vema FZ: Layer 2/3	* 412--- * Bahamas transect	388---- (NAP) Ceara Rise	330----/Add (NAP) Med. Ridge I (shallow)	2
9	NARM-DPG (NAP) Volcanic margins II	Bering (CEPAC/391) Bering Sea history	354-Rev Benguela Current	414--- N Barbados Ridge	2
10	GENERIC Galapagos hydro.	* 337--- * New Zealand sea level	* SR-DPG * Sed. Ridges II	369-Rev (NAP) MARK lithosphere	2
11	TIE} 407--- I 15°20'N MAR	* 347--- * South-eq. Atl. paleo.	404--- NW Atl. sed. drifts	330----/Add (NAP) Med. Ridge II (deep)	1
12	I * 413---- TIE} * Reykjanes Ridge	363-Add Grand Banks paleo.	* 361-Rev (NAP) * TAG hydro.	333--- Cayman Trough	1
13	325--- Endeavour Ridge	* 345--- * W Florida sea level	* 412--- * Bahamas sea level	NARM-DPG (NAP) Non-volc. margins III	1
14	368--- Hole 801C return	* 338--- * Marion Pl. sea level	* Cascadia-DPG * Cascadia margin II	* 411----/415---- * Carib./KT-boundary	1
15	* 374--- * Oceanographer FZ		* 337--- * New Zealand sea level	* 375----/results Leg147 * Hess Deep II	1
16			* 360--- * Valu Fa hydro.	376-Rev Vema FZ: layer 2/3	0
17				* 362-Rev3/Leg 141 * CTJ II	0
18				363---- GB-Iberia plume volc.	0
19				361-Rev (NAP) TAG hydro.	0
20				403-Rev KT bound., G/Mexico	0
21				368---- Hole 801C return	0

* Proposals not considered drillable in FY 1994 at the time of the meetings NAP: North Atlantic Prospectus 1991

1.) In the remainder of FY92, confirmed as is in the current Program Plan.

2.) In FY93, and beyond to November 1993, confirmed as is in the Program Plan approved at its December 1991 meeting in Austin, Texas, through Leg 152, East Greenland Margin, ending on or about 28 November 1993.

3.) In the remainder of FY94 through April 1996, in the Atlantic Ocean and adjacent seas and the eastern Pacific. FY94 program to be finalized in December 1992 at the Annual Meeting of PCOM with Panel Chairs.*

** defined as Caribbean, Gulf of Mexico, Mediterranean, Norwegian (including near-Arctic Ocean), Labrador, Red Sea.*

PCOM reaffirms its stand that at its Spring 1993 meeting, and at subsequent meetings, it will evaluate again the state of panel recommendations, technological developments, and the overall state of ODP, and again set the general direction of the drilling vessel for the subsequent four years, with a relatively firm early track and a relatively flexible later direction.

EXCOM will approve the FY93 Program Plan and endorse the FY94 - FY96 Prospectus at its meeting on June 17.

- Preparation for FY94 Program Plan. PCOM will decide the FY94 drilling schedule at the Annual Meeting with Panel Chairs in Bermuda in early December 1992. Essentially, that will require selecting ~6 legs in the Atlantic/adjacent seas and the eastern Pacific from among those ranked highest by the thematic panels at their fall 1992 meetings.

- An "Atlantic/eastern Pacific Prospectus" will be assembled by the JOIDES Office during the summer of 1992 that will include ~10-12 programs as candidates for FY94 drilling. The number of programs ranked highly and considered "drillable" by thematic panels *(refer to individual rankings by thematic panels on accompanying table)* and within the shiptrack set by PCOM for FY94 is 21. Final decisions on programs to be included in the prospectus will be made by PCOM in August, following additional input on "drillability" by the SSP.

- Panel activities. SSP, at its early August meeting (following the announced proposal deadline of 1 August for the FY94 drilling schedule), will scrutinize data for all highly-ranked programs, and then provide input to PCOM, which will decide later in August on

programs to be included in the "Atlantic/eastern Pacific Prospectus". Thematic panels, at their fall 1992 meetings, will then rank programs in the Prospectus; those rankings probably will resemble just-completed global rankings *(see table)*, but may differ depending on SSP recommendations, number of legs and their sequence, tool development, and/or new proposals received in time for review (i.e., by August 1, 1992).

- Preparation for future Atlantic and eastern Pacific drilling in FY95 and early FY96. PCOM's Offset [Section] Drilling Working Group (OD-WG) met for the third and final time in May 1992. The Sea Level Working Group (SL-WG) will hold its third and final meeting in early June 1992. Reports from both WGs will be delivered to PCOM in August. PCOM is also pursuing an initiative to develop a new generation of tools for in situ pore-fluid sampling, and has mandated a WG to develop an RFP for a feasibility study on that subject, in consultation with the JOIDES Downhole Measurements Panel (DMP).

d. Engineering prioritization and the Long Range Plan (LRP).

- At its April meeting PCOM, acting upon recommendations made in 1991 from both BCOM and ODP-TAMU, reconsidered the issue of prioritizing engineering initiatives. The goal has been to expedite projects of highest importance to ODP by focusing both available manpower and fiscal resources. The following motion was passed, unanimously:

Based upon advice by ODP-TAMU engineers, PCOM considers the following tools now operational: CORK, PCS I and MDCB (motor-driven core barrel). Their use should be encouraged by the Science Operator and the appropriate panels, with care that appropriate financial planning is in place.

PCOM now prioritizes engineering developments as follows:

1.) System developments:

a.) DCS evaluation and improvements. (Note: Prospectus on future development/costs expected from ODP-TAMU in August.)

b.) Engineering developments for core-log integration, including TOTCO, core orientation and sonic core monitoring.

c.) Deep drilling system/capability. (Note: A deep-drilling RFP is currently being prepared by ODP-TAMU and TEDCOM.)

d.) Improvements in existing coring techniques, i.e., XCB, RCB and APC.

2.) Leg-specific developments:

a.) Vibra-percussive corer (VPC) in preparation for legs 146 (Cascadia) and 150 (New Jersey/Middle Atlantic Transect).

The engineering priorities as set out by PCOM are in line with the LRP. PCOM will examine these priorities on a continuing basis, with a formal review once a year at its spring meeting.

- For the first time in April, PCOM also received a "short-list" of non-engineering equipment items prioritized by the JOIDES advisory structure. PCOM advised JOI, Inc. to acquire all of the items on the list, as funds become available.

- It continues to be clear to PCOM and the JOIDES advisory structure that some scientific goals as specified in the LRP for the latter part of the '90s and into the 21st century (e.g., deep stratigraphic tests to >2.5 km, drilling through oceanic lithosphere to Moho at depths of 5 km or more) will require a capability that exceeds that of the *JOIDES Resolution*, suggesting the need for alternate and probably multiple platforms to fulfill the promise of the LRP. As detailed above, PCOM will attempt to maximize capabilities of the present drillship before proceeding to consider use of additional drilling platforms, because cost is a major impediment to their near-term utilization within ODP. PCOM asks EXCOM for input on this issue.

e. Assistance in the 1993 renewal process.

- The PCOM Chairperson was invited to and attended (along with thematic panel chairpersons) the 4th ECOD workshop in Denmark [May 1992], which emphasized planning for future Atlantic/adjacent seas drilling.

Coffee and tea 10:00 - 10:15 AM

2. Program management report (JOI, Inc./T. Pyle).

a. State of the FY92 budget to date.

b. Outstanding issues

3. Science Operator report (ODP-TAMU, P. Rabinowitz).

a. Recent past, present and near-term future through 1993.

4. Wireline Logging report (ODP-LDGO, D. Goldberg).

a. Personnel changes.

b. Recent logging results (legs 139-143).

c. Status of tool development.

d. Data distribution/type statistics.

e. DataNet organizational changes.

f. DataNet implementation.

5. Fiscal report for 1992-93 (NSF, D. Heinrichs).

Lunch 12:00 PM - 1:15 PM

JS-D. *Ocean Drilling Program, 1993 and beyond*

1. Four year plan, 1993 - 96 (JOI, Inc.).

- The FY93 Program Plan component of the FY93 - FY96 Four-Year Plan was largely determined by PCOM at its Annual Meeting in December 1991. PCOM modified the FY93 drilling schedule at its April meeting by making Leg 148 a return to deepen Hole 504B instead of a further at-sea test of the DCS. *(Note: A copy of an Eos article detailing the FY93 program is attached to this Agenda Book. The accompanying map shows the FY93 program as modified in April by PCOM.)*

The first leg of FY93 (147) will be Hess Deep. Subsequent legs in FY93 are: Hole 504B (148), Iberia Abyssal Plain, NARM non-volcanic I (149), New Jersey/Middle Atlantic Transect (150), North Atlantic Arctic Gateways (151), and East Greenland margin, NARM volcanic I (152) *(see map included with this Agenda Book).* Legs 150 and 151 are constrained by weather windows, which has an important bearing on the ordering of legs in FY93.

- Adjustments to the FY93 Program Plan. At its April meeting, PCOM considered recent at-sea testing of DCS during Leg 142 (East Pacific Rise), and instructed ODP-TAMU to return in August with a detailed plan/cost estimate for further DCS development. At that time, PCOM will determine the continuing role of DCS within ODP.

- The FY94 - FY96 Prospectus is presently dominated by proposed programs in the Atlantic (and adjacent seas) and the eastern Pacific. This is a reflection of a number of factors: pent-up demand for drilling time by a large scientific community interested in those areas, scheduling by PCOM of long-term drilling initiatives (e.g., the NARM program, envisaged as 8 legs of drilling over 4 years), and perhaps a natural focusing towards "mature" drilling targets supported by a great deal of survey data. The JOIDES advisory structure has recognized this "regionalization" *(Note: Compare 1991 and 1992 global rankings on map to be displayed at the meeting.)*, and is reminding the community (again) that ODP is a global program. As a further response, RFPs either have been issued or will be issued shortly by various thematic/service panels for drilling in the Red Sea and for lithosphere characterization and gas hydrates.

2. Review of Briden Report recommendations (EXCOM/JOI, Inc.).

Coffee and tea 3:00 - 3:15 PM

3. Membership reports and status of ODP renewal.

a. Canada-Australia Consortium.

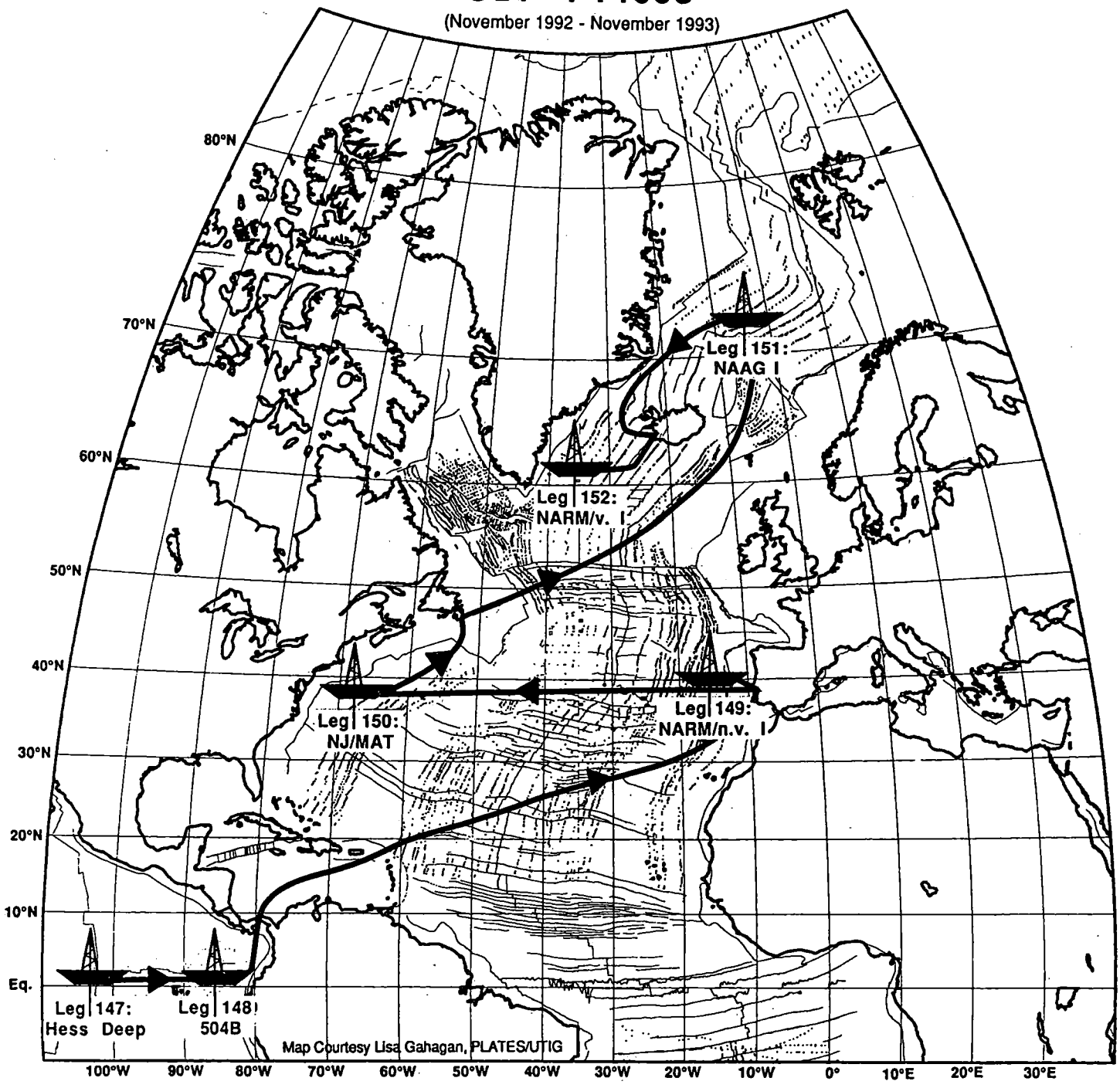
b. European Science Foundation Consortium.

c. France.

000020

ODP FY1993

(November 1992 - November 1993)



d. Germany.

e. Japan.

f. Russia.

g. United Kingdom.

h. United States.

JS-E. ***Other business***

Adjournment by 5:00 PM

A dinner in honor of ODP Council, hosted by JOI Board of Governors, will be held at Meridian House, 1630 Crescent Place, N.W., Washington D.C. Cocktails at 6:30 PM, dinner at 7:30 PM.

Wednesday, 17 June 1992 (9:00 AM)

EXCOM Executive Session
(Chairperson: A. Maxwell)

EX-A. ***Initial business***

1. Opening remarks.

- EXCOM will endorse actions arising from the special session on the Briden Report and PEC III Report on Monday, 15 June and from the Joint Meeting of EXCOM and ODPC on Tuesday, 16 June. EXCOM must also endorse the FY93 - FY96 Program Plan set by PCOM at its April 1992 meeting. In addition, EXCOM will hear the report of BCOM, discuss the move of the JOIDES Office to the University of Washington and conduct routine business.

2. Approval of minutes of 14-15 January, 1992 meeting (Bonn, Germany).

EX-B. ***Ocean Drilling Program, recent past, present and near-term future through 1993***

1. Budget Committee report (J. Briden).

- Minutes of the BCOM, held January 16, 1992 in Bonn, are included with this Agenda Book. T. Pyle (JOI) will already have reviewed the FY92 fiscal situation for the joint session of EXCOM and ODPC.

2. Approval of FY93 Program Plan and budget (JOI, Inc.).

- EXCOM is asked to endorse the FY93 Program Plan proposed by PCOM, and its budget, as proposed by BCOM and negotiated by JOI, Inc. The PCOM motion in December 1991 for the scientific component of the FY93 Program Plan was modified by PCOM at its April meeting to incorporate deepening of Hole 504B as Leg 148.

3. Other near-term planning and actions (PCOM, J. Austin).

- The PCOM Chairperson reminds EXCOM that PCOM would like input on: planning/funding for another (modified) COSOD meeting in 1993/1994, funding for additional drilling platforms in the near-

/middle-term (i.e., before 1998), and funding for site-specific surveys for legs already on the drilling schedule (e.g., Leg 150).

- PCOM is also in the process of developing RFPs for feasibility studies of a new generation of tools for *in situ* pore fluid sampling and deep drilling (each perhaps costing $100,000 (U.S.)), and would like input from EXCOM on whether or not such RFPs should/can be issued, given the present status of ODP funding.

EX-C. ***Ocean Drilling Program, 1993 and beyond***

1. Approval of FY93 - FY96 Program Plan (JOI, Inc.).

- EXCOM is asked to endorse the FY93 - FY96 Program Plan developed by JOI, Inc., in cooperation with PCOM and ODP subcontractors. *(Note: Copies of this Program Plan have been mailed to EXCOM members by JOI, Inc. in advance of this meeting. EXCOM members are asked to bring those copies along with them.)*

2. Actions on Briden Report (EXCOM/JOI, Inc.).

3. Actions on PEC III Report (EXCOM/JOI, Inc.).

Coffee and tea 10:00 - 10:15 AM

EX-D. Old business

1. Move of JOIDES Office to University of Washington (PCOM, J. Austin).

- University of Texas JOIDES Office personnel have already begun discussions with Brian Lewis (PCOM Chairperson-designate) to assure a smooth transition from the Institute for Geophysics to the University of Washington, effective 1 October 1992.

- The CAN-AUS consortium has nominated Mr. Bill Collins to take the place of Peter Blum as non-U.S. Executive Assistant. *(Note: See correspondence attached to this Agenda Book.)* EXCOM members are asked to put forward other names at this time *(Note: Those proposing new names please also provide supporting information, such as a CV.)*, or approve Mr. Collins as Dr. Blum's replacement.

2. Budget Committee membership (EXCOM).

- Present membership is Briden (Chairperson), Dürbaum, Nowell, Austin and Lewis.

3. Potential new ODP partners (JOI, Inc.).

EX-E. ***New business***

1. Actions required from joint ODP Council - EXCOM meeting (EXCOM).

EX-F. ***Future meetings***

1. EXCOM, Australia, January 27-28, 1993 (JOI).

2. Times and venues of other 1993-94 EXCOM meetings.

EX-G. ***Other business***

- EXCOM may wish to discuss and propose action on scientific and engineering preparation for the four-year Program Plan, or other aspects of near-term planning.

Adjournment by 12:00 PM

Lunch 12:00 PM - 1:15 PM

Wednesday/Thursday, 17 - 18 July, 1992; times and venues to be announced

ODP Council Meeting.

JOI Board of Governors Meeting.

MEETING OF THE JOIDES EXECUTIVE COMMITTEE
14 - 15 January, 1992
Bonn, Germany

REVISED DRAFT MINUTES

Executive Committee (EXCOM)

N. Bogdanov - Institute of Lithosphere, Moscow (Russia)
G. Boillot - Université Pierre et Marie Curie, Paris (France)
J. Briden - Natural Environment Research Council (United Kingdom)
C. Dorman - Woods Hole Oceanographic Institution
H. Dürbaum - Bundesanstalt für Geowissenschaften und Rohstoffe (Germany)
G. Eaton - Columbia University, Lamont-Doherty Geological Observatory
D. Falvey - Bureau of Mineral Resources (Canada-Australia Consortium)
C. Helsley - University of Hawaii, School of Ocean and Earth Science and Technology
K. Kobayashi - Ocean Research Institute, University of Tokyo (Japan)
L. Kulm (for D. Caldwell) - Oregon State University, College of Oceanography
M. Leinen - University of Rhode Island, Graduate School of Oceanography
A. Maxwell (Chairperson) - University of Texas at Austin, Institute for Geophysics
W. Merrell - Texas A&M University, College of Geosciences
M. Moss (for E. Frieman) - University of California, San Diego, Scripps Institution of Oceanography
A. Nowell (for R. Heath) - University of Washington, College of Ocean and Fishery Sciences
B. Rosendahl - University of Miami, Rosenstiel School of Marine and Atmospheric Science
L. Westgaard - European Science Foundation (Consortium for Ocean Drilling)

Liaisons

R. Anderson - Wireline Logging Services (ODP-LDGO)
J. Austin - Planning Committee (JOIDES Office)
J. Baker/T. Pyle - Joint Oceanographic Institutions, Inc.
D. Heinrichs - National Science Foundation and ODP Council (ODPC)
P. Rabinowitz - Science Operator (ODP-TAMU)

Guests and Observers

J. Baldauf - Science Operator (ODP-TAMU)
H. Beiersdorf - Bundesanstalt für Geowissenschaften und Rohstoffe (Germany)
E. Cailliau - Institut Français de Recherche pour l'Exploitation de la Mer
J. Erzinger - Institut für Geowissenschaften und Lithosphären-Forschung (Germany)
M. Fratta - European Science Foundation (Consortium for Ocean Drilling)
F. Goerlich - Bundesverband Deutsche Geologen (Germany)
K.G. Jacobs - Bundesministerium für Forschung und Technologie
J. Karte - Deutsche Forschungsgemeinschaft (Germany)
L. Kay - Natural Environment Research Council (United Kingdom)
G. Kullenberg - Intergovernmental Oceanographic Commission (UNESCO)
D. Maronde - Deutsche Forschungsgemeinschaft (Germany)
J. Maxwell - University of Texas at Austin, Department of Geological Sciences
Y. Miki - Science and Technology Agency (Japan)
C. Schneider - Deutsche Forschungsgemeinschaft (Germany)
S. Takagawa - Japan Marine Science and Technology Center (JAMSTEC)

JOIDES Office (University of Texas at Austin, Institute for Geophysics)

P. Blum - Executive Assistant and non-US Liaison
C. Fulthorpe - Science Coordinator

SELECTED ACRONYMS AND ABBREVIATIONS

AGU	American Geophysical Union
AMC	axial magma chamber
ARC	Australian Research Council
BGR	Bundesanstalt für Geowissenschaften und Rohstoffe
BGS	British Geological Survey
BHA	bottom-hole assembly
BHTV	borehole televiewer
BIRPS	British Institutions Reflection Profiling Syndicate
BMR	Bureau of Mineral Resources
BRGM	Bureau de Recherches Géologiques et Minières
BSR	bottom-simulating reflector
CSDP	Continental Scientific Drilling Program
CSG	Computer Services Group (ODP)
CY	calendar year
DCB	diamond core barrel
DCS	diamond coring system
DEA	Drilling Engineering Association
DFG	Deutsche Forschungsgemeinschaft
DI-BHA	drill-in bottom-hole assembly
DOE	Department of Energy
DP	dynamic positioning
DPG	Detailed Planning Group
ECOD	European (ESF) Consortium for Ocean Drilling
EEZ	Exclusive Economic Zone
EIS	environmental impact statement
ETH	Eidgenössiches Technische Hochschule, (Zürich)
FDSN	Federation of Digital Seismic Networks
FMS	formation microscanner
FY	fiscal year
GSGP	Global Sedimentary Geology Program
HRB	hard rock guide base
HRO	hard rock orientation
IDAS	isothermal decompression analysis system
IFREMER	Institut Français de Recherche pour l'Exploitation de la Mer
IGBP(/PAGES)	International Geosphere/Biosphere Program (/Past Global Changes)
ILP	International Lithosphere Program
IOC	Intergovernmental Oceanographic Commission
IPR	intellectual property rights
IRIS	Incorporated Research Institutions for Seismology
JAMSTEC	Japan Marine Science and Technology Center
JAPEX	Japan Petroleum Exploration Company
JGOFS	Joint Global Ocean Flux Studies
JOI-BOG	JOI Board of Governors
KTB	Kontinentales Tiefbohrprogramm der Bundesrepublik Deutschland
LANL	Los Alamos National Laboratory
LAST	lateral stress tool
LBL	Lawrence Berkeley Laboratory
LIPS	large igneous provinces
LRP	Long Range Plan
mbsf	meters below seafloor
MCS	multi-channel seismic
MDCB	motor-driven core barrel
MOU	memorandum of understanding
MRC	Micropaleontological Reference Center
MST	multi-sensor track
NADP	Nansen Arctic Drilling Program
NAS	National Academy of Sciences
NERC	Natural Environment Research Council
NGDC	National Geophysical Data Center
NSB	National Science Board
NSERC	National Scientific and Engineering Research Council (Canada)
OBS	ocean bottom seismometer
ODPC	ODP Council
OG	organic geochemistry
ONR	Office of Naval Research
OSN	Ocean Seismic Network
PCS	pressure core sampler
PDC	poly-crystalline diamond compact (drilling bit)
PEC	Performance Evaluation Committee
PPI	Producer Price Index
RFP	request for proposals
RFQ	request for quotes
RIDGE, InterRIDGE	Ridge Inter-Disciplinary Global Experiments (US and International)
SCM	sonic core monitor
SES	sidewall-entry sub
SNL	Sandia National Laboratory
SOE	Special Operating Expense
STA	Science and Technology Agency (of Japan)
TAMRF	Texas A&M Research Foundation
UDI	Underseas Drilling, Incorporated
USSAC	US Scientific Advisory Committee
USSSP	US Science Support Program
VPC	vibra-percussive corer
VSP	vertical seismic profile
WCRP	World Climate Research Program
WG	Working Group
WOCE	World Ocean Circulation Experiment
WSTP	water sampler, temperature, pressure (downhole tool)

JOIDES Committees and Panels:

BCOM	Budget Committee
DMP	Downhole Measurements Panel
EXCOM	Executive Committee
IHP	Information Handling Panel
LITHP	Lithosphere Panel
OHP	Ocean History Panel
OPCOM	Opportunity Committee (disbanded)
PANCHM	Panel Chairs Meeting
PCOM	Planning Committee
PPSP	Pollution Prevention and Safety Panel
SGPP	Sedimentary and Geochemical Processes Panel
SMP	Shipboard Mearurements Panel
SSP	Site Survey Panel
STRATCOM	Strategy Committee (disbanded)
TECP	Tectonics Panel
TEDCOM	Technology and Engineering Development Committee

DPGs and WGs:

A&G-DPG	Atolls and Guyots DPG (disbanded)
DH-WG	Data-Handling WG
NAAG-DPG	North Atlantic-Arctic Gateways DPG (disbanded)
NARM-DPG	North Atlantic Rifted Margins DPG (disbanded)
OD-WG	Offset Drilling WG
SL-WG	Sea-Level WG

FY93 Programs:

NAAG-I	North Atlantic Arctic Gateways, first leg (Leg 151)
NARM non-volcanic-I	North Atlantic Rifted Margins non-volcanic, first leg (Leg 149)
NARM volcanic-I	North Atlantic Rifted Margins volcanic, first leg (Leg 152)
NJ/MAT	New Jersey / Middle Atlantic Transect (Leg 150)

FY92 Programs:

A&G	Atolls and Guyots (legs 143/144)
CA	Cascadia margin (Leg 146)
CTJ	Chile Triple Junction (Leg 141)
EPR	East Pacific Rise (Leg 142)
HD	Hess Deep (Leg 147)
NPT	North Pacific Transect (Leg 145)
504B	(Deepening) Hole 504B (Leg 140)

JOIDES EXCOM
Tuesday, 14 January, 1992

519. Initial Business

Introduction and Opening Remarks

The meeting was brought to order at 9:00 AM by Maxwell, who introduced C. Schneider (DFG). Schneider welcomed attendees on behalf of DFG. He noted that EXCOM was meeting in a University of Bonn facility, adding that it was fitting that the meeting should take place in an academic institution with a strong earth sciences program. This was the first time during the 1990's that EXCOM had met in Bonn and Schneider hoped that it would not be the last. He wished EXCOM every success. Maxwell thanked Schneider for hosting the meeting and introduced Maronde. Maronde explained meeting logistics and arrangements for a dinner that evening and an excursion to Cologne the following day.

Introductions around the table followed. Maxwell noted that EXCOM's agenda was full. He outlined the meeting structure: the first day would cover post-1993 and renewal issues, while issues of the recent past, present, and near-term future would be addressed on the second day.

Maxwell stated that Anderson's proposed plan for future Wireline Logging operations represented long-range thinking of the type needed. However, it would not be discussed by EXCOM or BCOM, but would be referred back to PCOM for normal review procedures (e.g., review by IHP, DMP). Maxwell felt that by the time such reviews were complete, EXCOM would have considered procedures for subcontract renewal. EXCOM needed to decide on such procedures soon, since renewal was approaching, together with the issue of additional platforms.

Approval of Minutes of Previous Meeting

There were no further corrections to the revised draft minutes.

EXCOM Motion

EXCOM approves the minutes of the 9-11 July, 1991, meeting of ODP Council and EXCOM at La Jolla, California.
Motion Dürbaum, second Boillot — Vote: for 13; against 0; abstain 0; absent 4

Adoption of Agenda

There were no modifications to the agenda, which was adopted by acclamation.

520. Ocean Drilling Program, Post-1993

NSF Overview and Perspective

Heinrichs reported that, fundamentally, nothing had changed since the last EXCOM meeting in July, 1991. The same tenets were being followed: the LRP was regarded as providing the scientific direction for renewal; NSF was looking for a 10-year extension in principle as the next increment for ODP; *JOIDES Resolution* was considered by NSF the primary platform for the first 5-year period, with a possibility for change in 1998; a review of facilities and options

for the second 5 years would be conducted during 1994-1996; JOIDES would remain the primary planning organization of ODP.

Heinrichs went on to note some practical problems. Partners were in different stages of their renewal discussions: three countries had completed their reviews and four, including the US, were in various stages; the position of Russia was uncertain. At least one international partner had suggested that the commitment to *JOIDES Resolution* be <5 years. NSF was not proposing any international contingency plan for rundown of ODP in the event of non-renewal.

A draft MOU had been circulated since the July, 1991, EXCOM meeting for ODPC comments. One suggestion had been to change wording, which originally stated that JOIDES should provide advice and comments on the program plan, to state that JOIDES should approve the program plan. NSF had no objection to such a change. Suggestions had also been received concerning shipboard participation (numbers and timing). Heinrichs stated that shipboard representation would be at a level consistent with each partner's financial contribution to ODP; this must be correctly articulated in the MOUs. Another MOU matter, which was less an EXCOM issue, was that of intellectual property rights (IPR) raised by Germany. No satisfactory answer had been received from the US State Department; NSF needed to be informed by the State Department on what to include in the MOUs as a negotiating point. An additional MOU issue was restructuring how ODPC did business, but that should not affect EXCOM. Heinrichs felt that discussion of the basic content of the MOUs had been well received. New MOUs would look similar to existing MOUs.

An EXCOM subcommittee would report on future organization and management of ODP later in this meeting. NSF planned to continue with JOI, Inc. as prime contractor. EXCOM might need to discuss how JOI, Inc. was organized. Heinrichs stated that JOI, Inc. made strong management sense and would be difficult to change. Discussion of competition for subcontracts was also required.

NSF was using budget estimates in the LRP for planning purposes. NSF's model for future budget levels included 7 international partners and a 7% increase in dues in 1994. Resource allocation would have to be considered by JOIDES if there were only 5 or 6 international partners.

ODP Advisory Structure Report on Science and Technology Needs

Austin noted that his report was outlined in the Agenda Book (yellow pages 7-9). The report was based on the assumption that renewal would occur and that *JOIDES Resolution* would remain the primary drilling platform until 1998.

Austin began with a review of deep drilling developments. He pointed out that there were various definitions of deep drilling. ODP-TAMU considered deep drilling to include any hole that required ≥1 leg of drilling, while PCOM viewed deep drilling in terms of maximizing the capabilities of *JOIDES Resolution*, implying a 2.5 km hole in 4.5 km water depth (approaching the dynamic string limit). Parts of the scientific community wanted 4-6 km holes in 2-5 km water depth. At its August, 1991, meeting, PCOM modified OPCOM's recommendations to include a feasibility study of deep drilling (Agenda Book, yellow page 7). The issue was considered further at the December, 1991, PCOM meeting, at which PCOM asked ODP-TAMU to draft a RFP for the hiring of one or more consultants to carry out a deep-drilling feasibility study. The RFP would be reviewed by TEDCOM (Agenda Book, yellow page 8). Consultants would be paid from OPCOM funds if these became available. Dürbaum asked whether the studies would include DCS. Austin replied that the depth limitation of DCS had yet to be determined. DCS II was presently a 4.5 km system, but might ultimately be a 7 km system.

Moving on to DCS, Austin recalled that OPCOM had highlighted DCS as the most important ODP technological development; PCOM had reaffirmed this. Leg 142 would be an engineering test of DCS IIB. Leg 148 would be an engineering leg, also likely to be a test of DCS IIB. If Leg 142 was a scientific success, definitions might be changed to make DCS IIB operational technology, so that Leg 148 would no longer be a test of engineering development. There were some safety concerns about DCS IIB, because of the need for putting drilling personnel on a moving platform above the rig floor, but it had been judged safe in the event of catastrophic failure. DCS III would have all personnel on the rig floor and would also be more efficient that DCS IIB. A decision on DCS III options would be made in mid-late 1993; fabrication might cost ~$2M.

Concerning downhole fluid sampling, Austin said that ODP had made a number of attempts. At its August, 1991, meeting, PCOM had reaffirmed the critical importance of GEOPROPS, whose development had been frustratingly slow. It was hoped that GEOPROPS would be tested on Leg 146 (CA). MDCB, which was necessary for use with GEOPROPS, was tested successfully on Leg 141 (CTJ). B. Carson (Lehigh Univ.), Leg 146 co-chief, had taken over development of GEOPROPS. Recommendations of a specialist downhole fluid sampling meeting, chaired by P. Worthington and held in August, 1991, were presented to PCOM in December, 1991. PCOM authorized formation of a steering group for *in-situ* fluid sampling, to meet preferably in conjunction with DMP meetings. The steering group would generate a RFP and it was hoped that OPCOM funds would be available for development of the resulting tool design.

IHP had recommended to PCOM that ODP's data handling systems be improved. At its December, 1991, meeting, PCOM authorized formation of a Data-Handling Working Group (DH-WG), which will meet in March, 1992. DH-WG's mandate is given in the Agenda Book (yellow page 8). An ODP-TAMU meeting on computer requirements was scheduled for January, 1992. Austin hoped that DH-WG would work in conjunction with ODP-TAMU. He added that DH-WG's recommendations would have budgetary implications.

PCOM introduced a statute of limitations on ODP proposals at its August, 1991, meeting. ODP proposals that have not been updated for 3 years would be declared inactive. Proponents would be informed and urged to update their proposals. This move was necessary to limit the proposal review burden on thematic panels.

DISCUSSION OF ISSUES RELATED TO SUBCONTRACT RENEWALS

Baker explained that he would discuss management and contractual aspects and leave policy to the report of the EXCOM subcommittee on future organization and management (Briden). He would present a combination of the JOI, Inc. viewpoint and what had been learned during the course of ODP.

JOI, Inc. felt that the overall management structure (comprising a prime contractor and subcontractors) was effective and should be continued. It differed from the DSDP structure, which involved more than 1 major contract. Short-term contracts, as used at the end of DSDP, should be avoided; these were very disruptive. Furthermore, if additional tasks are proposed, new funding sources must be identified.

Current prime and subcontracts were in place until 1993. Decisions must be made now about whether to modify the structure. Any modifications should be convincing improvements. JOI, Inc. looked to EXCOM for guidance on this matter.

Science operations and full-time ship operations were currently at one institution, wireline services at another. For the period after 1993, consideration could be given to whether some of these functions should be continued at existing subcontractors or moved to new subcontractors. Baker noted that it was unlikely that any institution would wish to provide only service functions without science.

Unless major changes were proposed, ODP needed at least 1 full-time drillship. *JOIDES Resolution* was the ship of choice for the period 1993-1998 because of its capabilities and availability. The current ship contract had favorable terms through 1998. After 1998, the ship contract was at the discretion of both TAMRF and UDI. If the *JOIDES Resolution* was desired after 1998, contract negotiations should begin soon, the earlier the better.

In response to a question from Dorman, Rabinowitz explained that SEDCO would not want the same terms after 1998 as were presently in effect, because a big investment would be required to modify *JOIDES Resolution* at that time. Negotiations would be required. The present day rate was very favorable (< inflation). Merrell added that talks with SEDCO had so far been informal. Baker noted that the evidence suggested that the more negotiation was delayed, the less favorable terms would be after 1998.

Baker continued his report, pointing out that provision could be made for addition of part-time drilling vessels during the first 5-year period post-1993, and for either continuation of *JOIDES Resolution* or a different vessel in the second 5-year period. He showed an example of how this might be done (Appendix 1). From the management point of view, it was completely feasible to add additional vessels operated by institutions other than the prime ship contractor; there could also be additional wireline operators. These additional operators would report directly to JOI, Inc. or to prime operators. In response to a question from Helsley, Baker said that the view of JOI, Inc. was that funds should come through the prime contractor. Pyle added that some operators might offer their drillships free of charge, so that no new funds would be needed.

Baker explained that the Schlumberger wireline services contract was negotiated year-by-year. From the management point of view, it was completely feasible to add additional wireline services operators. These would report either to JOI, Inc. or to the prime wireline services operator. It was also feasible to add additional operations or engineering to ODP (e.g., downhole experiment coordination, Appendix 1).

Baker repeated that to maintain the integrity of a program with many facilities, centralized operation with a prime contractor and single science advisory structure should not be changed.

It would be feasible to have the JOIDES Office at a non-US institution, though the possibility of increased costs as a result would have to be considered. In addition, international affiliates could be added to JOI, Inc. JOI, Inc. had not yet, however, explored making itself an international corporation.

REPORT OF SUBCOMMITTEE ON FUTURE ORGANIZATION AND MANAGEMENT OF ODP

Maxwell recalled that, at its meeting in July, 1991, EXCOM had set up a subcommittee on future organization and management of ODP, comprising Briden.

Briden explained that his report (Agenda Book, white pages 189-204) addressed where ODP was at present, where it wanted to go, and how to get there. He had tried to build on debate at the July, 1991, EXCOM meeting. He had included some introductory material because he felt

that he was writing not just for EXCOM, but also for a wider audience which might be less familiar with ODP.

There were many forces for change. Briden quoted the draft PEC III report (Agenda Book, white pages 205-258): "ODP should operate as a science management structure entrusted with accomplishing certain scientific goals which go beyond the capabilities of individual P.I.'s or even nations." Briden concurred; he felt that ODP must be truly international and open.

Briden briefly outlined his report. The basic lesson of the "Financial Constraints" section was "be realistic". From the section "Principles of Organization", the lessons were: unified planning, devolved operations, and even-handedness. Regarding "Subscription Structure", Briden noted that present subscriptions gave international partners two shipboard scientists/leg; the US paid more. Briden proposed a funding structure for new vessels under which a host member must: 1) equip a ship for ODP at no cost to ODP; 2) reach contractual agreement with JOI/JOIDES for any shorebased operator contracts that it would host; 3) pay a standard subscription for the number of units of shipboard participation it proposed to buy; 4) negotiate whether it should also pay a "leadership" premium. Briden's personal view was that COSOD II objectives would not be achieved without a large increase in funding as a result of, e.g., an increased emphasis on global change or other initiatives. Within the normal budget, only a slight expansion would be possible. Briden added that a $0.5M increase in dues would be difficult for the UK at present. Passing over the section "Some Possible Additional Facilities", which he said that he would discuss later, Briden moved on to "Operating Modes and Management Structures". He felt that the goal of ODP was incompatible with a purely responsive mode. He would encourage *ad hoc* legs using other vessels, allowing any country to take the lead. However, the planning structure must not be fragmented.

Briden made the following comments on his recommendations. (Included as Appendix 2 and also listed in full in the Agenda Book, white pages 202-204; only Briden's brief comments are given in the minutes.) The recommendations fell into six categories.

1) Relation of ODP to international science: (i) the recommended scientific conferences should not be COSODs, which were neither open nor regular; (ii) continue bilateral liaison with other groups; (iii) rename ODP: International ODP.

2) Governance of the program: (iv) internationalize JOI, Inc.; (v) locate JOIDES Office outside US., on some kind of revolving basis.

3) Role of subcontractors: (vi) decentralize operating system.

4) Tendering for subcontracts: Briden commented that he was less sure that his recommendations on this topic [(vii), (viii) and (ix)] were right than he was about other recommendations. He said that it might not be good to have the Wireline Operator contract on a different schedule from that of the Science Operator, as suggested in the original report (Appendix 2 and Agenda Book, white page 202). Furthermore, as Baker had pointed out, it was unlikely that an institution will want to provide services alone, without science. With respect to recommendation (ix), there would probably be a penalty in moving that part of the Science Operator contract that relates to support of *JOIDES Resolution* from ODP-TAMU prior to 1998, because of the SEDCO contract.

5) JOIDES advisory structure: (x) PCOM should be more proactive and thematic; (xi) examine structure and terms of reference of thematic panels; (xi) change membership of advisory structure. In response to a question from Pyle, Briden said that ODP was thematically-driven and expressed the opinion that the thematic panels should push their themes hard and act as

referees. A highly authoritative and impartial group would be required to decide who got what, perhaps a small group of "wise men", who might also be non-proponents.

6) Incorporation of new vessels: (xiii) announce terms and procedures for incorporation of new vessels; (xiv) *ad hoc* use of other drilling platforms was already under consideration by PCOM; (xv) determine scientific and technical requirements for vessel(s) post-1998 (assuming *JOIDES Resolution* would be primary vessel until 1998); (xvi) assess significance of a multi-vessel program. Briden stated that time was short, if a state-of-the-art vessel was required post-1998. He recalled that Heinrichs had proposed an NSF review in 1994-1996. Briden felt that that was not soon enough. A group (of PCOM) should start to specify requirements of the post-1998 facility as soon as possible.

Briden's conclusions about the effects of implementing his recommendations were listed (Appendix 2 and Agenda Book, white page 204). In order to facilitate discussion, Briden proposed going back through the six categories of recommendations, adding his suggestions for EXCOM action.

1) Relation of ODP to international Science

Briden felt that recommendations (i), (ii), and (iii) were not contentious; (ii) was happening already. He suggested that EXCOM could simply endorse them. Maxwell noted that IUGG met every 4 years. He asked whether Briden expected more at his proposed conferences than presentation of results. Briden replied that feedback was needed, but not resolutions that PCOM was constrained to accept. The conferences should feed scientific insights and enthusiasm into ODP. Dürbaum suggested holding the conferences in conjunction with IGC or other meetings (e.g., IUGS), rather than specifically with IUGG, as suggested by Briden. Austin reminded EXCOM that STRATCOM had recommended such meetings, but that EXCOM had not supported the idea. He felt that EXCOM had now come full circle.

Briden said that the visibility of ODP was a problem, both in terms of publications and scientific debate at conferences, which tended to be fragmented. Free and regular communication between scientists was deficient at present. Maxwell expressed the concern that only people already involved with ODP tended to attend ODP-related sessions at meetings. Bogdanov felt that the proposed ODP conferences should be independent of other meetings. Many meetings had large registration fees. It would be better if the ODP conferences were independent and free of charge. Austin stated that EXCOM had told STRATCOM that independent meetings of that type would be too expensive. Bogdanov suggested that the meetings could rotate between member countries, with each paying the costs in turn. Baker supported Briden's recommendation about conferences. They were important both for openness of ODP and for publicizing ODP. He felt that it was essential that these conferences be part of another (scheduled, scientific) meeting so as to involve other scientists in addition to those already involved in ODP. However, Bogdanov stressed the problems that some scientists had in obtaining funds. Furthermore, meetings to which ODP conferences would be attached would be specialized and would not cover all ODP themes.

Noting the need to interface ODP with other initiatives, e.g., global change, Kullenberg suggested combining (i) and (ii) and having a conference in combination with other initiatives. Dürbaum recalled that EXCOM had told STRATCOM that EXCOM should not be involved in organizing such conferences, because that was up to individual scientists. Now EXCOM was saying that perhaps it should be involved.

Briden said that he preferred that the ODP conferences be adjuncts to existing meetings, because that would result in larger audiences and also be cheaper. He preferred IUGG to IGC, because IUGG involved atmospheric sciences and physics of the oceans and would, therefore,

allow interaction of ODP with other initiatives. Leinen supported ODP conferences as adjuncts to other meetings to avoid proliferation of meetings and minimize costs. Helsley also supported the idea. He stressed the importance of regularity of conferences for feedback and the need to establish a mechanism to get such feedback from the scientific community to ODP. Boillot expressed French support. He added that, while EXCOM must make the decisions and vote on the principle, the details were also PCOM's responsibility.

Merrell asked how much such conferences would cost, emphasizing the need to take that into account. Austin estimated that the cost of a conference would be in the range of several hundred thousand dollars to $1M. However, Heinrichs felt that it would be cheaper, ~tens of thousands of dollars, depending on the support provided. Maxwell agreed with Heinrichs. Merrell asked whether such conferences would replace COSODs. Austin noted that something of the kind was already happening. There would be an ODP thematic session at IGC in Japan in August, 1992, with a number of speakers. However, he asked how to get feedback into the advisory structure. Heinrichs suggested that the organizers could submit a report to PCOM. He added that proposed ODP conferences would not be replacements for COSODs. COSODs I and II had been useful. Another COSOD might be needed in 1994-1996. Merrell pointed out that a COSOD was a closed conference. Maxwell said that a workshop could be held, along with a symposium, at IUGG to give recommendations. He felt that Briden had raised the issue of conferences to get around the feeling that ODP was a "closed shop". If COSOD-type advice was required, there would be a need to go beyond a simple symposium. Heinrichs agreed with Kullenberg's suggestion to combine (i) and (ii); IUGG would cover large elements of global change. In response to a question from Baker, Briden said that he had envisaged the conferences as extra to, and not replacing, COSODs. Baker felt that ODP would have to sponsor ~50 invited scientists, and not just rely on who turned up, in order to have a focused meeting. That would cost ~$100,000. Briden suggested that it could be co-sponsored with IUGG and, in response to a question from Austin, added that IUGG met every 4 years and that he did not feel that more frequent meetings were necessary. Bogdanov noted that ODP sessions already existed at, e.g., every IGC. He asked what was new about the recommendation to hold regular conferences attached to existing meetings. Separate meetings were required. Helsley agreed that sessions were already taking place at most meetings, but stressed that some should be identified as particular times for feedback. He preferred such conferences every two years. Austin explained that the IGC session was for showcasing ODP. It was outward-directed and would not cost much. The feedback function was very different. Such conferences would have to be organized differently and would cost more. Merrell added that attendees would also need to have an idea of ODP's scientific plans in order to give feedback.

Maxwell reminded EXCOM that recommendation (i) was that ODP would benefit from regular conferences and feedback. It was fairly general and encouraged things that were going on already. Austin agreed that much of it was already happening, e.g., the Indian Ocean synthesis meeting. A western Pacific synthesis meeting had also been proposed. However, Briden's recommendation (i) would cost more, and money would have to be taken from something else. Briden stated that he had made the recommendation because he felt that, at present, neither ODP's written nor spoken communications were good enough.

In response to a question from Merrell, Briden said that the matter should be referred to PCOM and suggested changing the wording of (i) from "EXCOM should explore the advantages of holding them during IUGG General Assemblies,..." to "PCOM should explore...". Austin cautioned that if EXCOM handed this to PCOM, EXCOM would have to provide guidance on timing and the money it was prepared to spend. Austin felt that the conferences should be annual. Moss suggested that PCOM could be asked to give cost options. Maxwell suggested a straw vote on the principle of holding regular meetings that provided feedback, rather than on the details. However, Baker suggested discussing each of Briden's recommendations and

having a group review the issues overnight, returning with recommendations on which EXCOM could vote on the following day.

Merrell raised the issue of renaming ODP [recommendation (iii)]. Boillot responded that France supported two programs instead of one. It was the French view that two platforms would require two programs. ODP should remain open to a two-program option in the long-term future. Maxwell suggested deferring discussion of (iii). He asked Leinen, Merrell and Bogdanov to revise (i) and (ii) for discussion the following day. Dorman asked whether the reference to national drilling programs in (ii) referred to continental drilling or to marine programs. Briden replied that he had been thinking of marine programs, but that that could be extended. Dorman asked whether present linkages with other programs were adequate. Austin replied that they were; Pyle had done an excellent job promoting such liaisons.

2) Governance of the Program

Briden stated that his suggestions for dealing with recommendation (iv) were that JOI, Inc. should investigate legal and practical options and report at the next EXCOM meeting. Concerning recommendation (v), Briden suggested that EXCOM agree in principle and that JOI, Inc. should determine financial and other implications, again reporting at the next EXCOM meeting. Recommendation (iv) was complex, because JOI, Inc. was involved in matters other than ODP. International partners would not want to be members of JOI-BOG when it was dealing with those other matters. The international partners should be involved on an equal footing when JOI-BOG was discussing ODP. There were financial implications to (v) which JOI, Inc. should investigate. Dürbaum saw no need for recommendation (iv). He noted that EXCOM motions were legally endorsed by JOI-BOG, but that none had ever been changed. Therefore, it was EXCOM and the international membership of ODP that made decisions, not JOI-BOG. Maxwell explained that JOI, Inc. took EXCOM's advice on ODP. However, JOI, Inc. was legally responsible and JOI-BOG had to reaffirm EXCOM decisions. He agreed that, since JOI-BOG had never made any changes to EXCOM motions, EXCOM effectively made the decisions. Boillot stated that France wanted to internationalize JOI, Inc., if it remained the prime contractor. However, if JOI, Inc. were not to be the only prime contractor, the question would remain open. Merrell stressed that the members of JOI-BOG accepted legal responsibility for the drillship's activities (e.g., a blowout). He asked whether international partners wished to make themselves liable for such damages. In addition, he felt that either all countries would have to join JOI-BOG or none.

Pyle stated that JOI, Inc. did not know the financial implications of placing the JOIDES Office overseas [recommendation (v)]. Briden said that Baker had said that there would probably be additional costs associated with such a move. Pyle responded that telecommunications costs could be estimated, but that there might be other costs related to the sizes of the JOIDES Office proposals received. Rosendahl asked what % of JOIDES Office business was in the US. Austin commented on the large cost of sending documents by overnight courier. If the JOIDES Office was in, e.g., Japan, all mailings might have to be of that type and costs would rise. In response to a question from Dorman, Austin confirmed that the PCOM chairperson would accompany the JOIDES Office. Bogdanov felt that, based on his observations, DSDP/ODP had been very conservative over the last 10 years. He did not think that the present structure was suitable for >1 platform. He asked whether EXCOM should wait for new platforms to arrive or try to prepare for that eventuality in advance. Dorman asked whether, if the location of the JOIDES Office was determined by proposals, the fiscal problems would sort themselves out. Maxwell agreed, but noted that the location of the JOIDES Office had been based on rotation among institutions in the past. Austin commented that an advantage of rotation was that it continually involved new personnel. However, it was a disadvantage when long-term science was under consideration. Keeping the JOIDES Office within the US minimized that disadvantage. A less frequent rotation might be desirable if the JOIDES Office was to be

located overseas. Helsley disagreed, feeling that rotation overseas would be no more difficult than rotation within the US. Dorman asked whether Briden had assumed rotation of the JOIDES Office, as opposed to a bid process, when writing his recommendations. Briden replied that he had not anticipated that there would be a great clamor to compete for the JOIDES Office. It would be important for EXCOM to approve each location of the JOIDES Office; EXCOM seemed to play a small role at present. Maxwell explained that EXCOM did approve JOIDES Office locations, but that it was based on a rotation among US members. Briden responded that the point was, then, that EXCOM approval would become a more significant action in the future, if international locations were involved. Baker recalled that it was EXCOM that decided to rotate the JOIDES Office. Merrell noted that the rotation excluded operator institutions; he expected that that would also apply for international operators.

Maxwell felt that international rotation of the JOIDES Office was fairly simple, but that internationalization of JOI, Inc. [recommendation (iv)] was more complex. Briden agreed, adding that that was why he had suggested that JOI, Inc. investigate the options. Maxwell stated that EXCOM would ask JOI, Inc. to look into (iv). Dorman stressed that only the ODP-related business of JOI, Inc. should be internationalized. Maxwell agreed, adding that EXCOM would take up the matter of recommendation (iv) again at its next meeting. In the interim, JOI, Inc. should investigate the legal and practical options and report to the next EXCOM meeting.

Dorman wished to clarify that rotation of the JOIDES Office would involve rotation of the PCOM and EXCOM chairs. Maxwell affirmed that it would; he interpreted Briden's recommendation to mean that the present two-year rotation would continue, but that international partners would also be included. Helsley added that the JOIDES Office was currently rotating among eight US institutions; the suggestion was to add any international partners who wanted to host the JOIDES Office, excluding any who became operators. Dorman asked whether two years was too short. Austin thought that it might be difficult to attract the right people for longer periods. Dorman then asked whether rotation was the only alternative, or whether the JOIDES Office should be assigned on the basis of a proposal. Maxwell responded that it was important to know two years in advance where the JOIDES Office would be going. Westgaard stated that ODP would not last long enough to allow rotation of the JOIDES Office through all of the members and, therefore, supported a tendering mechanism. Maxwell replied that if EXCOM agreed in principle that the JOIDES Office should move, the mechanism could be defined later. EXCOM could decide where the JOIDES Office was to be at least two years in advance. Dorman said that he assumed that the JOIDES Office would move to the University of Washington as planned. Maxwell agreed, adding that the new system would come into effect after the University of Washington's tenure. Leinen suggested that the wording should not be that the JOIDES Office "should" rotate to non-US institutions, but that it "could" do so, because none of the international partners might want it. Maxwell agreed and asked JOI, Inc. to look into the implications. Baker asked whether the rotation period would remain at two years. Maxwell said that could be left to JOI, Inc. EXCOM agreed in principle; JOI, Inc. should examine the financial and other implications of rotating the JOIDES Office to non-US institutions and report to the next EXCOM meeting.

3) Role of Subcontractors and 4) Tendering for Subcontracts

Briden recalled that recommendation (vi) concerned the split of the Science Operator contract. For instance, engineering development might be separate from *JOIDES Resolution* science operations. Publications might also be decoupled; other institutions might want to bid for DCS development. This would prepare the way for multi-ship operation, because it meant that another ship could be combined without hanging onto it another engineering and publications operation. Baker pointed out that a country with a second drillship that wished to be a second science operator could be incorporated without changing the present system. There was no need to split the Science Operator for that purpose. Bogdanov felt that ODP was a US program

and not international. In the past, the USSR had been invited, eliminated and re-invited by the US. He said that the present situation was the same as it had been in 1974. If, in future, ODP involved multiple platforms, including international platforms, then it would be truly international. Russia could not be eliminated by the US if it had its own drillship. Briden's recommendation (vi) was a preparation for such internationalization. Maxwell noted that that also bore on later recommendations.

In response to a question from Eaton, Briden reiterated that he felt he had been wrong to separate the Wireline Operator from the Science Operator in his recommendations. He had separated them because ODP-TAMU's operation was so complex that it could not be set up for tender by September, 1993. However, it might be better to do all tendering at the same time than to move as fast as possible by tendering for the Wireline Operator first [recommendation (vii)]. Eaton asked why, if the wireline operation was to be put to tender, Anderson could not present his expanded plan for ODP-LDGO to EXCOM. EXCOM seemed to be saying that Anderson's plan could not be discussed, but that, at the same time, the wireline operation was "up for grabs". Heinrichs said that JOI-BOG had already agreed in principle to opening up subcontractor competition to the international partners.

Austin asked whether the motivation for devolution was to spread money around. Briden replied that it was not. He added that devolution was advisable, but not essential. Briden also suggested changing the wording of recommendation (vii) from "...international open tender..." to "...[international] tender to all JOIDES institutions...". There were risks involved in opening up subcontracting: there might be no interested parties or costs might increase (from existing favorable rates). However, this would never be known if the option was not investigated. Dürbaum noted that the contract between ODP-LDGO and Schlumberger also involved favorable rates, analogous to the low-cost ship contract. Anderson agreed, confirming that the cost to ODP was ~ $1/3$ of what the oil industry would have to pay. He asked why October, 1993, was specified in (vii). Briden answered that he had felt that that was the earliest possible date. Dorman said that, based on experience with the operation of *Alvin* , it was not advisable to split systems engineering from operation of the asset. He asked whether ODP-TAMU could tell EXCOM what components could be split from the Science Operator subcontract. Merrell replied that the subcontract could be split, but that operations would be less efficient. Adding elements was not an issue, e.g., Wireline Logging was added at the end of DSDP and more could be added. Splitting was different. He felt that ODP-TAMU would rather bid in 1993, i.e., early, and get the contract for a number of years. Otherwise, it would be difficult to hire good personnel.

Helsley highlighted the importance of a mechanism to be adopted by organizations interested in some portion of the program and suggested that EXCOM devise such a mechanism. Merrell stressed that ODP-TAMU would need to know as soon as possible if it was to lose the subcontract in 1993 so that it can stop hiring, etc. Maxwell said that there seemed to be two parts to the proposal: one was that, if there are any subcontracts, they should start at the beginning of FY94 and run through the 10-year program; the second was that, if any JOIDES institution wanted to compete, it should let the organization know.

Heinrichs said that October, 1993, was the renewal date. Renewal was likely, but action on subcontractors should perhaps be delayed until renewal was certain. Heinrichs did not feel that October, 1993, was a "magic" date. There would probably be some major changes in structure of ODP, at least post-1998. These should probably be made sooner rather than later, but whether "sooner" meant 1994 was difficult to say. The issue was whether EXCOM was going to provide advice to JOI, Inc. as the prime contractor. JOI, Inc. should work with their subcontractors and lay out a framework for people to tender. There was a commitment made by NSF that, with renewal of the program, this issue would be examined. EXCOM could not

redesign the program immediately. The best way for EXCOM to examine the issue and give advice to JOI, Inc. might be to set up a subcommittee to report within a short timeframe. Merrell said that another aspect was how to treat add-ons to the program. He felt that most proposals would be for new functions, meaning that something else must be dropped. Merrell added that if EXCOM wanted to redesign ODP, it should begin at once. Heinrichs stated he could envisage JOIDES members coming forward with capital assets, such as TAMU had when it won its subcontract (e.g., a building) that would offset any short-term financial penalties associated with changing subcontractors. Before anyone could make such an offer, there should be some consideration of scale. EXCOM should avoid "Balkanizing" ODP, with a large number of small subcontracts. He felt that development engineering, wireline logging, and perhaps some aspects of third-party tools, were possible units that might be considered for rebidding. This, of course, must be looked at within the framework of a reasonable budget, involving modest growth. The commitment to examining the issue and creating a plan people could react to had been made by NSF, and in principle by JOI-BOG. The issue was EXCOM's role. Helsley thought that ODP was already operating in the mode of recommendation (vi), i.e., was already in subcontracted mode. Details of how ODP was subdivided were the responsibility of JOI, Inc. EXCOM should just endorse a subcontracted ODP and extend opportunities to re-bid to all JOIDES institutions.

Maxwell felt that an *ad hoc* EXCOM group was needed to provide guidance on how to proceed with subcontracting. ODP-TAMU and ODP-LDGO should be involved. EXCOM could then reconsider the matter at its next meeting. Merrell emphasized that, if EXCOM wanted to re-tender ODP, ODP-TAMU preferred that the whole operation be tendered, not just part of it. ODP-TAMU might choose not to bid on a small part of the program. ODP-TAMU could not operate a small part at the same low overhead rate for which it operated the whole program. Cost implications were immense. TAMU provided salaries and the building. If tendering was to be in 1993, ODP-TAMU needed to know soon. Kobayashi noted that the Japanese had strong opinions about third-party tools. Downhole tools produced by non-US partners had sometimes been improperly treated. Communications had been unclear at times. He proposed that, in the post-1993 phase, tools and instruments should be treated by formally-designated contractors. In addition, PCOM should decide on plans for the use of such tools far in advance to allow time to prepare for their use. Maxwell agreed that there was no doubt that this needed to be examined.

Maxwell proposed Dürbaum, Westgaard and Dorman as an *ad hoc* subcommittee to report on subcontract tendering to the next EXCOM meeting. Westgaard asked to be excused from the subcommittee and was replaced by Falvey. Briden asked whether any realistic bids for ODP could be put together for October, 1993. Baker replied that the original proposals for ODP had been put together in less than one year. Merrell noted that it took time to offer a new drillship. That was what had taken TAMU the most time. Heinrichs said that he would ask JOI-BOG to consider the matter. He thought that the *ad hoc* subcommittee should report before the next EXCOM meeting. Maxwell added that there were two parts to be considered: existing and new subcontracts. Austin pointed out that subcontractor changes also affected science planning, because PCOM had assumed that *JOIDES Resolution* would be the main platform at least until 1995. It would be damaging if the capabilities of *JOIDES Resolution* were not matched or exceeded by the new drillship. Baker stressed that EXCOM must be convinced that any changes it wished to make to ODP would be for the best. There was no alternative drillship with the capabilities of *JOIDES Resolution* that could be turned on in one year. Bogdanov countered that JOI, Inc. had not been informed of all details of the Russian drillship, which would be cheap to operate. Maxwell noted that Heinrichs would raise the issue before JOI-BOG and underlined the need to have something resolved prior to the June, 1992, meeting of ODPC. Dorman cautioned that knowledge of willingness to compete for subcontracts was needed; he did not want to have an empty competition. Briden concurred, suggesting that JOI, Inc. ask all members whether they were interested in bidding. Baker responded that JOI, Inc.

would turn to EXCOM for advice. Merrell commented that EXCOM would also have to define the scope of the new program that was to be re-bid, so that the amount of money required was known, and also the duration of the new program. Maxwell stated that EXCOM could meet a day ahead of ODPC in June, i.e., on June 15, 1992, to hear the report of the subcommittee.

Maxwell summarized EXCOM's action: a subcommittee (Dorman, Dürbaum and Falvey) would examine subcontracting [recommendations (vi) to (ix)] and report back to EXCOM in June, 1992, at a meeting held the day before ODPC. The subcommittee would address: subcontracting of existing functions, new subcontracts and mechanisms, timing, and whether there was any interest among existing ODP members in bidding. Maxwell appointed Dorman as chairperson. In response to a request from Falvey, Austin said that the JOIDES Office would help the subcommittee with secretarial support.

5) JOIDES Advisory Structure

Briden characterized recommendation (x), concerning making the advisory structure more proactive, as the most important in this category. Recommendation (xi) was consequent on (x), while (xii) was perhaps not very urgent. Maxwell did not feel that there was a time constraint on these recommendations. They were also PEC III issues. He suggested deferring consideration of them until EXCOM heard the PEC III report the following day. Briden agreed, adding that his suggestion for dealing with these recommendations was to set up a review of the advisory structure to report on its performance and on options for change, to report to EXCOM at its January, 1993, meeting. Baker asked that a review of PEC be included, now that there had been several PECs. Maxwell concurred, but deferred further discussion until EXCOM had heard the PEC III report.

6) Incorporation of New Vessels

Briden outlined his suggestions for dealing with recommendations in this category: (xiii) JOI, Inc. should report back in June, following which terms and procedures would be announced; (xiv) EXCOM should endorse; (xv) EXCOM should defer this item to PCOM; perhaps a Technical Requirements-DPG should be set up, working to an earlier schedule than specified in the recommendation; (xvi) endorse and incorporate in (xiii). Briden emphasized that a hiatus in ODP must be avoided. Merrell felt that that requirement would make tendering unfair to any bidder other than TAMU. A hiatus would be unavoidable if *JOIDES Resolution* was to be replaced after October 1, 1993. Briden responded that he was not assuming that a change of operator would necessarily mean a change of drillship. However, Merrell noted that it might. Dorman stated that his subcommittee would take as a condition that there would be no hiatus, whether bidding was in 1993, 1998, or some other time.

Austin pointed out that the LRP contained a complete technical specification for the 90's. If EXCOM wanted more, it would have to give PCOM a mandate for such considerations. PCOM had fed into the LRP, but Austin did not feel that EXCOM liked the LRP. Heinrichs said that he liked the LRP, but that he did not think that it covered all technical specifications. Austin doubted that PCOM was configured for determining technical specifications. Heinrichs suggested that PCOM could find experts. Austin agreed, but added that that would involve budgetary impact.

Eaton asked whether there were existing procedures for modifying ODP, which Anderson's report on wireline logging had violated. Briden said that discussion of procedures for change began with the question of how to incorporate NEREIS, which would change the balance of ODP. There was a procedure, but it must be restated. Rosendahl asked how an extra drillship could be operated, when ODP could barely afford one. Briden said that his report included

discussion of options, e.g., NEREIS could be operated for 3 months/year, provided that the new host paid an extra amount and that there was an 15% increase in contributions. However, 6 or 12 months operation was not achievable without a major increase in funds.

Maxwell stated that all agreed with (xiv) and that EXCOM should endorse it; (xvi) could be deferred. He asked the subcontracts *ad hoc* subcommittee to include (xiii) and (xv) and return with comments the following day. Austin expressed his willingness to get PCOM to empower a body to address (xv). Maxwell preferred to wait until the subcommittee had reported. Dorman stated that he took the word "encourage" in recommendation (xiv) to mean that the thematic panels should encourage PCOM.

Maxwell commended Briden for doing a very thorough job. EXCOM produced the following consensus.

EXCOM Consensus

EXCOM thanks and congratulates Jim Briden for his stimulating report. EXCOM agrees with the general ideas developed in this report, and wishes to study carefully its recommendations during its next meeting. EXCOM encourages all efforts for improving the management and efficiency of the drilling program and also its internationalization.

REPORT ON STATUS OF POTENTIAL DRILLING FACILITIES

France (NEREIS)

Cailliau explained that NEREIS should be considered a European, and not French, ship for light drilling and on-station experiments (Appendix 3). NEREIS should be a high-tech facility capable of carrying out sampling, downhole instrumentation, seafloor and other experiments, and observations. Penetration of the seafloor was required by all of these themes. Some penetration could be achieved by cable-deployed drills or piston corers, but deeper drilling would be required for some targets. NEREIS would, therefore, be a drillship capable of handling up to 6000 m of drill pipe, HPC-coring to 300 m in soft sediment, and rotary drilling to 50 m in hard rock. Dynamic positioning and heave compensation would be required.

The status of NEREIS was that a general European agreement on the idea and concept had been obtained. A new ship would cost ~$100M. Most potential partners were not able to identify financial contributions in the short term. France might be able to pay 1/3 of the cost in 1994, but 2-3 additional countries would be needed. The cheaper alternative of converting an existing ship was under investigation. A possible scenario involved two drillships (*JOIDES Resolution* and NEREIS), two scientific objectives (hard and soft rock), and two programs (International ODP and European NEREIS program) (Appendix 3).

Maxwell asked about the timing of NEREIS. Cailliau replied that two studies of ship conversions were underway. He could not comment on one, but results of the other would be available within a few weeks and its conversion would cost ~$20-30M. Conversion would take place in 1994-1996. However, it would never happen as a purely French program. Other partners were required. Maronde asked whether there had been any indications of financial commitment. Cailliau answered that the European Economic Community might commit ~25% of the total. In response to a question from Maxwell, Cailliau confirmed that he was the best person for the *ad hoc* EXCOM subcommittee to contact for information on NEREIS.

Russia

Bogdanov began by announcing that the USSR Academy of Sciences had become the Russian Academy of Sciences and that Russia would pay the fee for membership of ODP. A letter from Bogdanov to Maxwell about the Russian drillship was handed out. Bogdanov recalled that the USSR had been eliminated from IPOD in 1980 and denied entry into ODP in 1987. Consequently, the then-USSR decided in 1987 to build its own drillship, which would differ from *JOIDES Resolution*, and have the goal of drilling super-deep holes (4500 m holes in hard rock in water depths of 4000 m). The ship would be capable of Arctic drilling and be able to remain on station for 5 months. The drillship would also carry two submersibles to examine nearby geology. At the same time, Bogdanov believed that there would be another ship for sediment study with a riser (the main proposed ship has no riser); two sister ships already existed, one of which was already working in the Arctic. One of the ships was able to drill 500 m of sediment with a 500 m riser. The main drillship was about 25% completed and would be afloat by the end of 1992. Its drilling equipment was ready. The Russian ODP and national drilling program groups had now been joined; Bogdanov was responsible for both. Russia would like a partner to help finish drillship construction.

In response to a question from Rosendahl, Bogdanov said that it was difficult to be specific about how much money would be needed to complete the drillship. He estimated that it would cost ~$3M, at the official exchange rate, if it was built in Russia. He could not be certain about future developments, but construction was continuing and completion would be cheap if funded from outside Russia. Erzinger commented that the Russian drillship might be capable of meeting LITHP's deep-drilling objectives, which no western ship could achieve. Dorman asked for clarification of Russia's priorities, as expressed in the letter to Maxwell. Bogdanov responded that Russia had money for ODP membership for 1992, but 1993 was uncertain. If financial constraints forced a choice between ODP membership and completion of the Russian drillship, Russia would choose their drillship. He added that, if Russia built the drillship alone, the Russian scientific community would want it all to itself.

Japan

Miki thanked EXCOM and Maxwell for the opportunity to attend. A STA report, "New Deep Sea Drilling Program in Japan", was handed out. Miki explained that STA planned and promoted science and technology policy and coordinated various fields in the government. An organizational chart for ocean R&D in Japan was included in the handout. STA's budget for ocean science and technology was $100M. The emphases in ocean research were: 1) deep-sea exploration (development and operation of Shinkai 6500 submersible, an ROV with 10,000 m depth capability); 2) ocean observation and research (TOGA, WOCE, JGOFS work and, in addition, an action plan on Pacific Ocean research agreed upon the previous week by the US President and Japanese Prime Minister); and 3) coastal ocean R&D.

Cost of the proposed Japanese drillship would be more than twice the cost of the Shinkai 6500 submersible system. Significance of deep-sea drilling research and development of deep-sea drilling systems, together with research to be carried out using the proposed drillship, were outlined in the STA handout, as was the development schedule of the proposed drillship. During FY92, ¥50M would be spent on developmental research for the drillship. Construction was scheduled to begin in late 1994 or 1995 and earliest operation (Phase I) with a 2000 m riser would be in 1997. The Phase II system, with a 4000 m riser, would be operational by the year 2000. Budget constraints or technical difficulties could delay these phases. Negotiations with the Finance Ministry would begin in the fall, so 1992 was critical. Miki said that he would welcome foreign encouragement for expenditure on ocean drilling by Japan and wished for good relations with JOIDES. Principal specifications of the proposed drillship and a list of technical development items were given in the handout. Miki noted that the final design might

be smaller. He added that consideration of software should be accelerated. The drillship would probably be operated through JAMSTEC. The Japanese drilling program was envisaged as being "borderless"; various forms of international participation would be accepted. Japan was opening the door of its R&D system more to the international scientific community. The new drillship program might become a good test of international cooperation. Miki hoped for strong international support and cooperation.

Erzinger asked why penetration was limited to 3500 m. Kobayashi replied that 3500 m was thought to be the meaningful penetration depth for understanding ocean crust and the maximum penetration achievable in 6 months on site. The drillship would be unable to operate around Japan in the winter months, when the weather would be too severe for its dynamic positioning system. The technological limit to penetration was 6000 m in 4000 m water depth. In response to a further question from Erzinger, Kobayashi said that the drillship would operate in the northwest Pacific at the initial experimental stage, but would go further afield in later years. Leinen asked how long the purely Japanese phase would last and whether the drillship might move into, e.g., the Indian Ocean. Miki answered that an international science board would have to be set up to consider such issues. Merrell asked about projected operating costs. Miki answered that these were expected to amount to $30-40M/year.

USA

Merrell reported that he knew of no plans to build any US drillships. The *Explorer Seven Seas* and the *SEDCO/BP 472* were operating out of Galveston. They had riser capability (~2000 m was state-of-the-art). Their day rates were ~twice that of *JOIDES Resolution*. The day rate of a semi-submersible, which would be needed in order to drill a very deep hole, was ~three times that of *JOIDES Resolution*. Merrell noted that *JOIDES Resolution* was co-owned by UK and France. It could drill with a riser, but would require modification (the riser was stored where the lab stack was located). *JOIDES Resolution* would require renovation in 1998, at some cost to ODP. Increases in the day rate for *JOIDES Resolution* have been < inflation.

In response to a question from Leinen, Merrell said that the renovations to *JOIDES Resolution* in 1998 would probably cost ~$2M. Actual cost would depend on whether a riser was desired. *JOIDES Resolution* could remain on station for a year with resupply every two months. In reply to a question from Dorman, Merrell said that there was yard work scheduled for 1994, but that that was part of the day rate. Rabinowitz added that such yard work was supposed to be carried out every four years, but that extensions could be obtained for almost a year beyond that time.

Other

Austin stated that OPCOM had recommended a feasibility study of additional platforms. A consultant, H. Zaremba (whose name had been obtained from TEDCOM), had been contacted and had attended the September, 1991, TEDCOM meeting and Victoria port call. A draft proposal had now been received from Zaremba. OPCOM allocated $100,000 to the feasibility study. The study would take 90-180 days. Zaremba had acknowledged that a great deal of equipment was available, but he is interested in a dependent rig system that can be deployed from *JOIDES Resolution*. Selected PCOM, panel members and others would review the proposal. Specific programs for which additional platforms had been considered by PCOM were A&G and NJ/MAT. Both required shallow-water drilling capability. It is possible that $1.7M of OPCOM funds might be left over in 1993 for additional platforms. Proponents of NJ/MAT (Leg 150) had submitted a proposal to NSF to carry out onland drilling. In addition, a potential extension of Leg 133 drilling on land across the Great Barrier Reef was under consideration by Australia and UK.

521. Membership Reports and Status of ODP Renewal

CANADA-AUSTRALIA CONSORTIUM

Falvey informed EXCOM that the major event since the last meeting had been the Victoria port call in mid-September, 1991. There was a fairly extensive report on the port call, which had significant impact on Canada's renewal proceedings. Canadian renewal for 5 years, however, was still under review.

In Australia, the ARC granted a 3-year renewal in December, 1991 (for CY92-CY94). Ministerial approval, the final step, was virtually certain. During the next six months, the Australian ODP Secretariat would move from the University of Tasmania to either the University of Sydney or the University of New England; the decision on which institution would host the secretariat would be made in early February. The Bangkok Conference on Sustainable Development in the Pacific would be held on 9-12 March 1992. It would include ODP presentations, a poster session on ODP, and also the C-A Board of Management Meeting. In conclusion, Falvey noted that the *R/V Rig Seismic* now had a 240-channel MCS system, which could be used for ODP site-related surveys.

EUROPEAN SCIENCE FOUNDATION CONSORTIUM

Westgaard stated that no decision on ESF's renewal had yet been made. A formal letter had been sent by ESF to the consortium members asking for their responses to renewal. No responses had yet been received, but no serious problems were apparent. There might be some changes in the scales of contributions; the Nordic group would contribute 50%. The review report had been printed and sent out. A workshop entitled "Drilling toward the 21st Century" would be held in Copenhagen on May 6-8, 1992. Fratta added that ESF had received the official letter from NSF and would answer in a positive way, with the proviso that no agreement had yet been signed between ESF members. In response to a question from Austin, Westgaard said that the Copenhagen conference would not be critical to renewal.

FRANCE

A French position paper is attached (Appendix 4). Boillot reported that an evaluation group, made up of people not involved in ODP, had studied: the quality of ODP's science program and potential for the future (which was not questioned and received a good evaluation), technology, and organization and management. The consensus in France was to continue ODP membership for 3-4 years, but also to recommend that ODP focus its activity on a small number of high-priority themes, e.g., paleoclimates, deep structure of oceanic crust and sedimentary basin evolution. Regarding the organization of ODP, France suggested splitting the duties of PCOM between two committees: a "permanent COSOD", Scientific Committee to consider long-term issues and strategy, with a PCOM to consider short- and medium-term planning. In addition, France favored at least two separate, but coordinated, international drilling programs. Discussion by the Comité Directeur for ODP of the Briden report is also summarized in Appendix 4. Boillot stated that NSF wanted MOUs signed at the end of 1992. However, the French attitude depended on the conclusions of the Briden report and related discussion at the next EXCOM meeting. After the June 1992 EXCOM meeting, France would follow up discussions with NSF about the MOU. Boillot noted that the Anderson proposal for wireline logging was not on the agenda for the present meeting, but was to be considered by PCOM, etc. France was interested in the proposal to expand activities to different countries and expected to discuss the issue at the next EXCOM meeting.

Cailliau commented that France could sign an intent to participate in ODP, but had a problem with some details. Boillot agreed, adding that France saw the need to participate in ODP. The question was only that of the evolution of the organization. France would have no difficulty participating, if EXCOM accepted the major conclusions of the Briden report.

GERMANY

Dürbaum stated that Germany had been happy to host this meeting and the August, 1991, PCOM meeting. Several DFG personnel were attending the EXCOM meeting because of its importance to Germany's renewal decision.

The KTB borehole had reached a depth of over 0.5 km and should reach 6 km by mid-February, at which point the hole would be cased and drilling would recommence ~20 March, 1992. The German ODP meeting would be held in Hamburg on March 4-6, 1992. Dürbaum extended an invitation to attend and offered to send copies of the minutes. The purpose of the meeting was transfer of German ODP results to the rest of the scientific community. Germany had been pleased with the synthesis meetings (Indian Ocean and upcoming West Pacific). *R/V Sonne* had been completely rebuilt and lengthened by 10 m. A MCS survey of the Iberia Abyssal Plain for Leg 149 (NARM non-volcanic) had been completed in October/November, 1991. A South Atlantic regional survey had revealed interesting changes in composition of oceanic crust.

Maronde reported that the "brown book", which would form the basis for German discussions on renewal, had been published by DFG in August, 1991. A short discussion at the the Senate Joint Commission on Earth Sciences in DFG, held at the beginning of November, 1991, covered results of the July, 1991, ODPC/EXCOM meeting and confirmed Germany's positive attitude toward renewal. Germany would try to answer NSF's formal letter soon. Germany had a problem with article 5 in the MOU, which concerned intellectual property rights. Maronde hoped that difficulty could be solved. The final decision would be made in May, 1992. DFG had added two projects to its 1991 budget, which now included 39 projects at DM3.7M.

JOIDES EXCOM
Wednesday, 15 January, 1992

UNITED KINGDOM

Briden informed EXCOM that the UK review had been completed and the report had gone to the NERC Council in November, 1991. Renewal had been approved subject to successful negotiations of MOUs. He introduced L. Kay, who was running the UK ODP office.

Overall, Briden felt that the marine geosciences in the UK were currently going well. He stated that rules had been changed to allow scientists to apply for funds to collaborate in Europe. A contract for a high-temperature resistivity tool was underway in the UK. Briden noted that R. Kidd had put a lot of effort into the Indian Ocean synthesis meeting and would appreciate the fine words spoken about it at EXCOM. A site survey cruise on the east Greenland margin (NARM volcanic) was being built into a *R/V Charles Darwin* cruise scheduled for summer, 1992. Briden announced the beginning of a mid-ocean ridge program, which was well-coupled with InterRIDGE, though the program did not receive as much money as had been hoped for. The funds would probably be spent on swath bathymetry hardware. On January 9, 1992, a meeting had been held to develop a program in paleoceanography.

The rebuilding of *R/V Discovery*, which was being lengthened by 10-11 m, was almost finished, with delivery scheduled for May/June, 1992. *Discovery* would then go to the

Southern Ocean for a JGOFS-related program. BIRPS had completed circumnavigation of the UK with deep seismic reflection surveys and had also surveyed the Madeira Abyssal Plain. During the week following EXCOM, BIRPS would survey across the Banda Sea to link up with *R/V Rig Seismic* surveys and complete a traverse into Australian waters.

Maxwell welcomed the good news that the UK had formally renewed its membership in ODP, being the first full partner to do so.

JAPAN

Kobayashi reported that the first meeting of the Special Committee for Deep Ocean Floor Investigation of the Geodesy Council was held on 18 December 1991, to evaluate the performance of ODP and to examine the possibility of its renewal. A progress report of nearly 200 pages was prepared for the meeting. The report comprised an administrative report on both domestic and international matters, a summary of scientific results, and statistics of responses by Japanese shipboard participants and the general Japanese scientific community to a questionnaire. Reviews of four outside scientists were also included. This first meeting reached no final conclusions, but the general attitude of members appeared favorable to renewal.

A domestic conference on recent progress in ODP was held in late November, 1991, with almost 100 participants. The Japanese scientific community was very interested in working further on long-term borehole measurements, especially seismometers. It had been proved by results from Hole 794D (Leg 128) in the Japan Sea that measurements at the bottom of holes yielded much better signals, particularly from long-period seismic waves essential to global network studies. ODP's long-term plans should include use of the drillship for such long-term experiments. Japan would request more formalization of long-term measurements in the post-1993 ODP.

The new Japanese magnetometer for A&G legs and beyond had almost been completed. Kobayashi hoped that there would be enough time and sufficiently good hole conditions to test the magnetometer on the A&G legs.

In response to a question from Helsley, Kobayashi confirmed that noise levels were lower when long-period seismometers were placed downhole. Helsley asked that EXCOM return to the issue of OSN. Maxwell replied that it could be addressed under *Old Business*.

RUSSIA

Bogdanov stated that, in general, the Russian scientific community was satisfied with the first half-year of its participation in ODP. A conference was planned at which cruise participants would present scientific results. Russia was conducting some site survey work and hoped to submit more proposals. Bogdanov hoped that he would have a more full report next year.

Maxwell pointed out that Bogdanov had raised the issue of travel funds for Russian scientists with Baker. Maxwell wished to raise the issue before EXCOM so that all JOIDES members were aware of it. Bogdanov explained that Russian scientists had difficulty raising travel funds. Beginning January 10, 1992, Aeroflot had raised its prices by a factor of 10. Bogdanov had asked JOI, Inc. to assist by applying to a NATO fund that had been set up to support travel of Russian scientists. Without such assistance, Russia would only be able to provide funds for travel of cruise participants, but not for travel to panel meetings. Maxwell noted that there were no objections from EXCOM members and instructed JOI, Inc. to proceed with the request.

UNITED STATES OF AMERICA

Heinrichs began by noting that the final FY92 Ocean Sciences budget was $178.8M, compared to $164.8M in 1991 (Appendix 5). ODP received a 4% increase, to $36.4M. The Ocean Sciences budget was increased by 8.5%, compared to the requested increase of 15%. The overall NSF research budget was increased by 10%. Antarctic logistics funding had been shifted from NSF to the Department of Defense.

ODP-related field programs in FY91 were: EPR OBS refraction and *Alvin* surveys, Antarctic margin MCS, Cascadia, Marquesas and Kane Transform. FY92 field programs were: Hess Deep, EPR *Alvin* survey, Ceara Rise, Barbados Ridge (3-D seismics) and Oregon margin. One FY93 program had already been funded (Vema Transform).

Regarding renewal, letters to international partners had been received (see schedule, Appendix 5). NAS had set up an *ad hoc* committee to review ODP, which met in November and also in December, 1991, at AGU. The report had been completed and was favorable. It made some suggestions about international management and the top-down/bottom-up issue in addition to internal US matters. NSF would receive the report at the end of January, 1992, and it would be available to those who wanted copies. The NSF review panel would hold its final meeting in March, 1992. NSB would give final approval in August, 1992. NSF sought a 10-year renewal in principle, with a commitment to 5 years and approval to spend specific funds for 4 years (FY93-FY97). The new MOUs should be signed around the end of 1992 or in early 1993. The FY92 budget, approved at $41.4M, was increased by $167,000 (independent of OPCOM funds).

Briden asked whether EXCOM was happy with the development of the 4-year program plan (FY93-FY96). He found it curious that it was driven by NSF rather than JOIDES. He asked whether it was under control or was being rushed. Heinrichs replied that the 4-year program plan was not driven by the renewal process. He thought that it was not necessarily needed by March 15 (as previously intimated), but that it would be needed by June. Austin disagreed, noting that he had been informed by NSF that mail review of the 4-year plan would be needed by mid-March. Briden reiterated that the 4-year plan should be done well and not rushed. He also asked about the status of OPCOM funds, pointing out that it was now 3.5 months into FY92 and it was still not known whether those monies would be available. Heinrichs replied that it had always been expected that the proposal for OPCOM would be received early in the operating year and that it had, therefore, never been envisaged that the money would be available on October 1, 1991. The money was not yet forthcoming because of uncertainty about international partner contributions. The Russian contribution for FY92 had still not been received. Another reason for the delay was that the NSF budget was not approved until late December.

Pyle circulated a handout outlining the JOI/USSAC report. He noted that Leinen was the first lecturer in this year's distinguished lecturer series.

522. Old Business

POTENTIAL NEW MEMBERS

Baker reported that IOC had been trying to put together a coalition of developing countries to participate in ODP. He introduced Kullenberg.

Kullenberg observed that he was happy to be able to attend the meeting. He characterized ODP as a leading example of how a successful program should be organized. IOC had been

sounding out interest in other countries. The key point was to reach the right decision-makers in those countries. Participation would be a question of national priorities, national security and internal debates. Generation of interest in the ocean was a struggle. At the same time, global change was a problem of political and public concern. It was up to the scientific community to help provide insights, knowledge and answers. At present, two framework conventions were being developed (one each on climate on biodiversity) for presentation to the UN Conference on Environment and Development in Rio de Janeiro in June, 1992. Additional funding would be closely related to both of these frameworks. It was, therefore, important to acknowledge the need to carry out research to address uncertainties and not avoid the issue. ODP was addressing relevant topics. Kullenberg wished that to be brought to the attention of those preparing the conventions and the Rio conference. Within the big international financial organizations, e.g., the World Bank, a consortium had been arranged, referred to as the Global Environment Fund, to which large amounts of money had been donated by many countries. This was a reflection of the great interest in this problem among those countries, which included those represented by EXCOM members. The need to study global change was emphasized at last year's London summit. That was where the driving forces on the international scene were coming from. ODP must make itself felt. It was the one example in the earth sciences where concentration of effort had been enabled by a facility. It was important to maintain ODP and, if possible, to enlarge its support.

IOC was attempting to find strong voices in science in each developing country to influence decision-makers. With the help of ODP-TAMU, IOC had assembled an information package and sent 200 letters to scientists. To date, 60-70 replies had been received from China, Brazil, Argentina, Chile, India, Pakistan, Papua New Guinea, Malaysia, Africa (weak response), Caribbean, Indian Ocean and Mediterranean nations and even Pacific Islands. Responses had been positive. Kullenberg asked whether EXCOM could provide any advice. The next step would be to distribute the information package, to be followed up by visits to some countries, perhaps including some JOIDES personnel. It was vital to get to the governments involved and to be able to present strong intellectual arguments. The aim was to establish a third-world consortium funded from development funds. The rationale must be presented strongly, because ODP would be prioritized along with other programs requiring development funds; the need to prioritize research might be questioned. Kullenberg stated that IOC planned to use technological development and environmental decisions as the focus for its arguments. It was felt desirable to support some of the third-world scientists to attend IGC. Kullenberg had discussed that with the Japanese.

Maxwell commented that IOC seemed to be making progress. He added that JOI, Inc. and JOIDES would be pleased to assist.

523. Summary of Scientific Results, Leg 140 (Hole 504B)

Erzinger, Leg 140 co-chief, explained that Hole 504B represented the best opportunity for ODP to achieve a major goal that had eluded drilling programs for over 20 years: coring deep within the oceanic crust. This goal had been repeatedly emphasized as a top priority by the JOIDES Ocean Crust Panel and LITHP, and by COSODs I and II. Important objectives of the study of oceanic crust were the layer 2/3 boundary and the Moho. A major step toward the goal of coring and logging the transition between the sheeted dike complex of Layer 2C and the gabbros of Layer 3 was within the reach of the next drilling leg to Hole 504B. Layer 3 gabbros had never been sampled *in situ*, so coring and logging the transition would provide fundamental information regarding the physical, hydrological, seismic, and magnetic nature of Layer 3, and the role of gabbros in the mineralogical and geochemical evolution of oceanic crust. Sampling the diabase/gabbro transition would be a critical step in further verifying and/or refining the ophiolite model for present ocean crust.

Drilling at Hole 504B has had a long history. Junk left in the hole and concerns about casing led to abandonment of Hole 504B for several years after Leg 111. Subsequently, (engineering) Leg 137 cleaned the Leg 111 junk, but left more. Leg 140 cleared the hole of Leg 137 junk and deepened Hole 504B to 2000.4 mbsf. Hole 504B was now the deepest ODP hole.

On Leg 140, a week to 10 days was allowed to clean out Leg 137 junk. If cleaning was not completed during that period, the remainder of Leg 140 would have been spent at Hess Deep. Commercial fishing tools did not work. Finally, a home-made ("double dog") fishing tool was designed and fabricated and the junk was fished on the last fishing run before *JOIDES Resolution* was due to depart for Hess Deep. Erzinger praised the hard work of SEDCO personnel. Normal RCB coring was used to deepen Hole 504B. The rate of penetration when drilling was terminated was 2 m/hour with normal torque. Hole 504B remained stable, with negligible evidence of hole ellipticity and backfill problems, and was left open and clean.

The temperature log showed that Hole 504B was underpressured at the interface between sediment and pillow lavas, and was sucking water in. Temperatures had fallen and risen between legs at Hole 504B, suggesting that the hole was "breathing". The temperature gradient was ~61°C/km with a temperature of ~ 200°C at the bottom of Hole 504B. Rocks at the bottom of the hole were still dikes (dolerites and diabases); no gabbros had yet been encountered. Field evidence, from submersible observations and ophiolites, suggested that the layer 2/3 boundary varied in thickness from a few meters to 100 m and comprised mixed dikes and gabbros. Greenschist facies rocks, of relatively uniform chemistry, were recovered. Their alteration indicated that, if the ophiolite model was correct, the bottom of the hole was very close to gabbro. One chemical indicator, zinc, changed drastically downhole. Its concentration was constant down to the depth where Leg 140 drilling began, but decreased in the zone of Leg 140 drilling, suggesting that this region was the source for zinc in hydrothermal fluids. Seawater drawn down into the crust reacted with rock at high temperature in the zone of maximum element solubility. Zinc was the most mobile element and the first to be leached. It was expected that further drilling would reveal that copper would be the next element to vary in concentration downhole.

A prominent seismic reflector (X-reflector) lay 50-400 m below the base of Hole 504B and could represent the layer 2/3 boundary, providing a good rationale for deepening the hole. (It had been thought that the layer 2/3 boundary was a faint reflector higher in the section, but that was drilled and shown to be simply a porosity decrease.) Oceanic crust was relatively thin at Hole 504B (~4-4.5 km versus, more usually, 6 km) and, therefore, *JOIDES Resolution* could reach the mantle at that site, especially since drilling rate would increase in gabbro.

Erzinger appreciated having been made a co-chief and felt that ODP was a very professional program. He highlighted two problems. The number of personnel available for logging operations was insufficient; the ODP-LDGO logging scientist needed an engineer on board to work on ODP-LDGO tools, if they were present, because the Schlumberger engineer was only responsible for Schlumberger tools. In addition, a third-party tool had been present, but there was nobody on board who knew about it. A third-party specialist should be on board for such tests.

Discussion

Bogdanov asked how many dikes had been encountered and their dip. Erzinger replied that ~15 dike margins had been drilled, dipping at 70°. Dürbaum asked whether a near-bottom refraction survey had been performed in the area. Austin replied that there had been no such survey, but that LDGO sonobuoy data had been reinterpreted recently and suggested that the layer 2/3 boundary was less than 100 m below the bottom of Hole 504B. In response to a question from

Beiersdorf, Erzinger said that the rate of penetration at the bottom of the hole had been 2 m/hr, or 15 m/day including trip time. Core recovery rate was ~15%, but depended on grain size: recovery rates varied form 70% in coarse-grained diabases to 0% in fine-grained chilled margins. The material tended to form disks, 2 cm thick. This hindered recovery with RCB coring. There were plans to improve the core catcher. Bogdanov felt that, though it would not affect operations at Hole 504B, it would in future be better to choose locations for drilling oceanic crust where sheeted dikes were absent, since drilling them wasted a lot of time. He added that drilling 15 m in a single dike would produce rocks that were all the same and, furthermore, dikes could also continue into the gabbro layer. Erzinger responded that the rocks recovered from Hole 504B had not been all the same. Austin pointed out that drilling at Hess Deep would do what Bogdanov suggested.

524. Ocean Drilling Program: Recent Past, Present and Near-term Future through 1993

FY92 AND FY93 BUDGET AND PROJECTS

Heinrichs showed projected ODP budgets (Appendix 6). The FY91 budget included a fuel supplement from NSF of $0.4M. Basic projections for FY92-FY94 (Appendix 6.1) were based on 7 international partners and a 7% increase in international partner contributions in 1994. JOIDES LRP estimates were used for projections.

Though a commitment had been received from the Russian Academy of Sciences to continue in ODP in 1992, its contribution of $2.75M had not yet been received. If Russia withdrew, there would be no LRP supplement (OPCOM money) and by FY94, the US would be paying 61% of ODP's costs (Appendix 6.2). If the OPCOM money was retained, with only 6 international partners, the US would end up paying 63% in FY94 and, furthermore, the US contribution would have to increase by $4.5M from FY92 to FY93 (Appendix 6.3 and 5.4). Russia would not know whether it could remain a member until February, at the earliest, and there could, therefore, be no decision on OPCOM funds until then.

Discussion

In response to a question from Rosendahl, Heinrichs said that the US contribution would be >60% with any 6-partner scenario. It would be in the 50%'s if there were 7 international partners. Replying to a question from Maxwell, Heinrichs stated that ODP could continue to operate with 6 international partners and no OPCOM funds. Dürbaum asked whether BCOM would consider the scenario of ODP ending, since that would require a different budget for FY93. Heinrichs answered that NSF had not requested that. Rosendahl asked whether a potential rise of the US contribution to 60% or more would hinder attempts to internationalize ODP. Heinrichs acknowledged that a higher US contribution would strengthen US management of ODP. He added that BCOM should retain the assumption that there would be 7 international partners as the primary model. A 6-partner model should be an alternate. Austin cautioned that DCS, additional platforms and high-latitude support vessels were "big-ticket items" and could not be fiddled with without major changes in scientific planning.

PROGRAM MANAGEMENT REPORT

Budget Issues

Pyle began with a wrap-up of FY91. Budget overruns had been resolved with the help of a $167,000 increment from NSF. There would be no impact on operations. The $1.17M remaining from the fuel fund would be carried over to FY92 and was not a windfall.

Moving on to FY92, Pyle reported that BCOM had approved OPCOM's recommendations and a proposal had been submitted by JOI, Inc. The proposed study of additional platforms would probably be funded regardless of availability of OPCOM funds; the proposal had been received from consultant H. Zaremba in January, 1992. In general, as long as there were no cuts in funding for FY92, no problems were envisaged (with fuel, day-rates, etc.).

For FY93-FY96, preparation of the 4-year program plan was underway and a "budget outline" had been submitted. BCOM would meet in Bonn following EXCOM. The schedule was ambitious (Appendix 7) and put pressure on PCOM Chairperson Austin to produce a 4-year science plan quickly. Budget estimates were being prepared in parallel with work on the science plan, rather than following completion of the science plan. In FY93, the plan involved DCS deployment, ice support vessel and perhaps an additional platform (for NJ/MAT).

Management Issues

Pyle reported that a DCS *ad hoc* review held at ODP-TAMU had concluded that more experience was needed with DCS IIB in addition to Leg 142. PCOM had since scheduled Leg 148 as a DCS IIB test. The review also stressed that DCS III was vital and recommended that design work be continued, but that construction be deferred.

High-temperature tools continued to be a focus of effort. Leg 139 (Sedimented Ridges I) had successfully adopted a "beg, borrow, steal" strategy. Leasing and development were on course with JAPEX, BRGM, PLASTELEC S.A. and Camborne School of Mines (all international organizations). A scheme for joint development with the US Department of Energy (DOE) continental drilling program had been proposed. Under this scheme, DOE would fund a slimline, high-temperature downhole water sampler; ODP would advise on construction and develop uphole deck and laboratory equipment. An *ad hoc* geochemistry group, chaired by J. Edmond (MIT), was advising JOI, Inc. on this issue.

The PEC III review had been completed and would be discussed later in the meeting. A draft report of the NAS review of the LRP had also been completed.

Pyle noted that a review of international purchasing and personnel had been conducted, at the request of NSF, and the report submitted to NSF in January, 1991. Policy changes were yet to be discussed with NSF (see Appendix 7 for the draft proposals put forward by JOI, Inc.). JOI, Inc. felt strongly that subcontractors needed names of vendors provided by each member country, so that it was not necessary to go through EXCOM every time. For items costing >$25,000, JOI, Inc. suggested that the subcontractor should allow 45 days following notification of member country representatives for vendors to submit a proposal. If a product was required in <30 days, no RFP would be disseminated to the international partners. A similar policy was recommended for international personnel hiring (Appendix 7). US Immigration and Naturalization Service regulations would dictate a minimum level of expertise of prospective personnel. Pyle said that he would welcome input. Heinrichs circulated a draft report "ODP Procedures and Policies with Respect to International Purchasing and Employment", which stated past practices, noting that, as Pyle had pointed out, the issue had yet to be discussed by NSF and JOI, Inc. and a plan sorted out.

On the issue of public relations and interactions with other initiatives, Pyle stated that he had published an article on ODP, entitled "Drilling Ocean Ridges" in *RIDGE Events* (November, 1991).

Pyle raised the issue of international representative to the next JOIDES Office. He hoped to have that person attend the April PCOM meeting. Austin added that the person should be from C-A or ESF.

Dürbaum asked whether there were any minutes of the DCS review meeting. Pyle said that he would send out a summary.

ADVISORY STRUCTURE REPORT

Austin noted that his comments were summarized in the Agenda Book (yellow pages 10-12). At its meeting in April, 1991, PCOM had recorded a consensus on the need to limit shipboard scientific party size. At its meeting in December, 1991, PCOM asked ODP-TAMU to look into augmenting technical support, and reducing the scientific party (probably US), by two/leg. The JOIDES Office had reviewed consistency of thematic panel rankings in response to EXCOM's request at its June, 1991, meeting (see tables in Agenda Book, white pages 264-265). Top-ranked proposals tended to remain highly ranked, but lower rankings were more dispersed. The system seemed to work well.

The FY93 drilling program had been defined at the December, 1991, PCOM meeting (Agenda Notes, yellow page 11). *JOIDES Resolution* might be augmented with a jack-up rig for NJ/MAT. NAAG would require an ice-support vessel, at a cost of ~$1M.

Short-term planning actions concerning FY92 were summarized in the Agenda Book (yellow pages 11-12). Dürbaum, noting that OSN-2 was not to be drilled on Leg 145, felt that FDSN should provide a global priority list of potential OSN holes and not consider each hole separately. Austin responded that that message had been sent to FDSN.

SCIENCE OPERATOR REPORT

A booklet containing the Science Operator report was handed out at the meeting. Rabinowitz reported that, since the last EXCOM meeting, legs 139 (Sedimented Ridges I) and 140 (Hole 504B) had been drilled and Leg 141 (CTJ) had just been completed. Summaries of legs 139 and 140 were included in the handout. High temperatures encountered on Leg 139 had created few problems for drilling and, though preparations had been made to deal with expected H_2S problems, none occurred.

Co-chief scientists had been selected through Leg 146. Rabinowitz said that he had been asked about short-term EXCOM participation in a cruise close to shore. Leg 146 would be within 100 km of shore during parts of the leg. Interested EXCOM members should inform ODP-TAMU as soon as possible, as their participation would impact staffing.

In February, 1992, Initial Reports volumes would be published up to Leg 137 (post-cruise time to publication ~11-13 months). Scientific Results volumes had been completed through Leg 121 (post-cruise time to publication ~36-37 months).

All co-chiefs and all PCOM co-chief nominees were listed in the handout. Only 6-7 co-chiefs were not PCOM nominees, and those were always special circumstances. Referring to recent discussions about a too-literal interpretation of MOUs concerning selection of co-chiefs, Rabinowitz stated that ODP-TAMU had not really done that. The international balance of co-chiefs was averaged over a period greater than one year.

A list of non-US ODP-TAMU employees was included in the handout. All positions were advertised internationally, but few international responses had been received. It was planned to

distribute a brochure on employment opportunities at ODP-TAMU to shipboard scientists. They could then spread the the information at their home institutions.

WIRELINE OPERATOR REPORT

Anderson reported that ODP-LDGO was inundated with data. The amount of logging data being distributed was increasing. That distribution could be done electronically via Internet. ODP-LDGO has a geographically-oriented database (GeoBase) which would enable users to select and transport data. Anderson felt that the structure of the Wireline Logging group could be changed, e.g., at present, insufficient funds were going to management of third-party tools, but they could be managed in a decentralized, international way over Internet. Anderson hoped to place nodes in several countries to take advantage of local expertise; he wanted funds from BCOM to implement that plan.

Discussion

Rosendahl asked why not make all shipboard data, not just logging data, accessible by computer. Anderson replied that it was good to begin with logging data, because Schlumberger was doing that now. In addition, MAXIS would be coming in the future. He added that the data could also be encrypted. Erzinger asked whether raw or processed data (e.g., including heave compensation) would be distributed on the computer network. Anderson answered that ODP-LDGO proposed downlinking to processing labs. Data could include a label stating that they were not processed. Boillot, noting that Anderson's ODP-LDGO proposal would be evaluated by PCOM, asked whether EXCOM would discuss it in June. He felt that would be useful. Maxwell responded that EXCOM could ask PCOM to try to report back. Austin said that PCOM would look at the science plan (thematic panels would report to PCOM on it). He added that PCOM would get EXCOM something for its June meeting.

525. New Business

PERFORMANCE EVALUATION COMMITTEE III REPORT

The PEC III report was included in the Agenda Book (white pages 205-258). J. Maxwell, chair of PEC III, began by noting that ODP was in charge of exploring ~75% of the earth's crust and needed to get that across to the public and fellow scientists. PEC III had concluded that some changes were needed, but that the process should be a metamorphosis, rather than a revolution.

PEC III's charge had been to evaluate management of ODP and performance of subcontractors. PEC III studied every aspect of operations, through visits and attendance at meetings. PEC III's overall evaluation was that the program was excellent.

PEC III felt that ODP-TAMU was a good operation. However, staff scientists and technicians were overburdened and budget limitations on the engineering group inhibited timely development.

JOIDES Resolution was impressive and well-maintained. SEDCO personnel were rated highly by ODP and shipboard scientists. Accommodation was cramped and dining facilities were inadequate. Size of the scientific party should be reduced.

ODP-LDGO was also a good operation and very busy. It was hoped that changes described by Anderson could be implemented.

The lengths of legs seemed to be tiring. Complaints had been fewer during DSDP. Morale among the technicians was poor.

PEC III looked at the success of legs as a measure of ODP's achievement of its planned goals. Success was measured relative to COSOD and pre-cruise objectives. Results were summarized in the PEC III report (Agenda Book, white pages 221-223) and presented in more detail as an appendix to the PEC III report (Agenda Book, white pages 233-253). Serendipity has played a role in cases when original objectives could not be achieved.

PCOM had made good-faith efforts to promote participation in ODP research. These efforts had been successful in that a large number of proposals had been submitted. However, PEC III felt that the seismic data required for successful proposals presented a problem for many proponents. The concept of letters of intent was a good first step to alleviating that problem, but the scientific community was not sufficiently aware of that option.

J. Maxwell summarized PEC III's recommendations (Agenda Book, white page 229) as follows.

- Delay in publishing some important science caused by having to wait for Scientific Results volumes was unacceptable. PEC III suggested early publication in peer-reviewed, outside journals.
- A professional science writer should be employed to publicize ODP.
- Steps should be taken to alleviate overcrowding on *JOIDES Resolution.*
- A panel should be appointed to review the JOIDES planning and advisory structure.
- ODP should be more focused. Thematic panels should direct proposals, not simply react to them.
- ODP-TAMU should address the problem of low technician morale.
- A mechanism for funding site surveys should be established so that availability of such surveys was not the determining factor for acceptance of proposals.
- Funds provided to JOI, Inc. for contingencies should be continued.

Discussion

A. Maxwell explained that subcontractors were usually asked to respond to PEC reports, but that there had not yet been time for such responses. He hoped to have subcontractor responses at the next EXCOM meeting. Baker stated that subcontractors could give oral reports. Rabinowitz responded that ODP-TAMU had addressed the issue of technician stress by changing management. He hoped that would correct the problem. Anderson stated that the step into Internet was an attempt to alleviate the data overload problem at ODP-LDGO highlighted by PEC III.

Maxwell noted that the PEC III and Briden reports were complementary. Baker said that EXCOM and PCOM should consider the issue of a review of the planning and advisory structure. Austin felt that PCOM could not ask for a review of itself. PCOM was presently doing almost all that PEC III had suggested and was, therefore, satisfied. More would require EXCOM action. Briden pointed out that his recommendations (x), (xi) and (xii) on the advisory structure recommended such a review. It might be too urgent to leave to the next EXCOM meeting. The review could be set up based on PEC III's and Briden's own recommendations to report in a year. Heinrichs stated that France had also proposed a scientific committee to examine the advisory structure. Maxwell responded that he was concerned that EXCOM proceed properly, and that required thought. Dürbaum proposed that a review be set up by fax during the two weeks following EXCOM and not be deferred for six months. Dorman suggested asking PEC III to take this further step. However, J. Maxwell felt it should be done by present or past EXCOM members. Helsley said that the terms of reference of any review committee would have to be sent to EXCOM members by fax. Maxwell suggested that

EXCOM leave it to Baker and himself to define the terms of reference. They would then contact EXCOM members within two weeks. The review committee could review the advisory structure and, if changes were needed, make recommendations.

Maxwell thanked PEC III, which he felt had produced the best PEC report to date. J. Maxwell responded that he would pass that on to the rest of PEC III.

Baker noted that PECs were ~3 years apart. The next would be appointed in late FY93 and do its work in FY94. PEC was a NSF contractual requirement with JOI, Inc. Maxwell suggested that EXCOM might wish to discuss that. Heinrichs stated that NSF had no objections. Briden felt that having PECs report to EXCOM might be preferable to having them report to JOI, Inc. That could be an MOU issue and, therefore, urgent.

526. Report of EXCOM *ad hoc* Subcommittees

Before hearing the reports of the EXCOM *ad hoc* subcommittees, EXCOM reached the following consensus.

EXCOM Consensus

EXCOM noted with great interest the ongoing planning for new ocean drilling facilities as presented by Japan, Russia and the NEREIS project. EXCOM welcomed these as potentially important contributions to ocean drilling and associated science and enhanced international cooperation, and encouraged further development of the plans in close cooperation with JOIDES planning. In particular, EXCOM welcomed the recent Japanese national policy which is expected to lead to increased contributions to the international science community.

An EXCOM *ad hoc* subcommittee, comprising Dorman, Dürbaum and Falvey, had met overnight to discuss recommendations (vi), (vii), (viii), (ix), (xiii) and (xv) of the Briden report, related to subcontract issues and incorporation of new vessels. Dorman reported results of the deliberations (a summary was also handed out at the meeting). The subcommittee would recommend to EXCOM (and via EXCOM to JOI, Inc.) specific contracting options to achieve continued ODP excellence and demonstrated cost effectiveness with enhanced international participation during the ODP renewal period (1993-2003), i.e., what should be tendered for bid, to which offerers, how and when, and how bids would be evaluated. A caveat would be that NSF intended the sole-source prime contract to remain with JOI, Inc. for 1993-1998.

Dorman described the plan of action and timing. A clear statement of current contractual responsibilities (statements of work) would be provided by JOI, Inc. by 24 January 1992. Requests for statements of interest (with statements of work) would be sent to all EXCOM members by 30 January 1992. The baseline program for FY93-98 was defined as FY93-FY98 with *JOIDES Resolution* as primary drillship, and current statements of work for drillship, science and science support, and wireline logging operations. The 4 areas of interest to be considered were as follows.

A) In the baseline program, which work elements would members bid on if offered? (Members should describe their capabilities and rationale.)

B) In the baseline program, what supplementary projects would members like to bid on, if offered for competition (beyond current OPCOM plans)? Members should describe projects, timing, rationale, cost estimate, funding alternatives.

C) If baseline program was completed, what would members like to offer for the post-1998 timeframe.

D) As alternate to the baseline program, how would members restructure contracts and operations for FY93-FY98? (Members should describe their offering, timing, ship, service, etc.; cost impact; rationale.)

Responses to request for statements of interest were requested by February 25, 1992 (responses did not have to be very formal). The *ad hoc* subcommittee would meet on February 27 to March 3, 1992, to visit ODP-TAMU, ODP-LDGO and JOI, Inc. (possibly other US institutions) and review responses. The subcommittee would collect supplementary information and arrange visits to offerers by 30 March, 1992. Visits to offerers would take place between 11-26 April, 1992. The *ad hoc* subcommittee would meet to draft a "strawman" on 4-8 May, 1992. The strawman would be reviewed by JOI, Inc. for legal /regulatory suitability by 22 May, 1992. The final report would be disseminated by 5 June, 1992, with presentation at the next EXCOM meeting on June 15, 1992. Dorman asked that EXCOM support travel of the subcommittee. Maxwell agreed. Dorman also asked for recognition that countries and institutions represented by the subcommittee members would not be excluded from participating in bidding.

Baker said that EXCOM would have to agree to some procedure, e.g., that information on who was interested in bidding, and on what, became public in June, 1992, but would be kept confidential until then. Maxwell suggested making the information available to all EXCOM members. Dorman agreed that it would be available, but that the subcommittee did not wish to disseminate it. Maxwell said that a summary would be sufficient. Falvey noted that, under those terms, there would be no confidential submissions.

A second *ad hoc* subcommittee, comprising Leinen, Merrell and Bogdanov, had met overnight to discuss recommendations (i) and (ii) of the Briden report. Leinen reported that the subcommittee had reworded recommendation (i) to read as follows.

> "The sciences that are served by ODP could benefit from *regular open* scientific conferences on the Scientific Contributions of Ocean Drilling. EXCOM asks PCOM to explore the advantages of holding them during IUGG General Assemblies, and ways of achieving feedback into the JOIDES advisory structure (paragraph 6)."

The subcommittee could not improve on the original wording of recommendation (ii). EXCOM concurred with the rewording of recommendation (i).

527. Future Meetings

The June, 1992 EXCOM/ODPC meeting will be held on 15-18 June, 1992, in the Washington, D.C., area. The report of the Dorman and others *ad hoc* subcommittee will be discussed on 15 June. ODPC/EXCOM will meet on 16-17 June. Possible spillover and JOI-BOG will meet on 18 June.

The next international EXCOM will be hosted by Falvey in Australia. The meeting has been scheduled for 27-28 January, 1993. JOI-BOG would meet on 29 January. A set of scientific lectures (as was given preceding the June 1991 EXCOM meeting at SIO) would be arranged for 26 January. The probable venue would be a reasonably-priced resort setting near the Great Barrier Reef.

ADJOURNMENT

Maxwell thanked the host, Maronde, and DFG.

The meeting was adjourned at 12:30 PM.

APPENDICES ATTACHED TO THE 9-10 JULY 1991 EXCOM MINUTES

1. Tiers of contracting
2. Briden report recommendations
3. Report on NEREIS
4. France - position paper
5. US membership report, supplemental information
6. FY92 and FY93 budget and projects, supplemental information
7. Program management report, supplemental information

HANDOUTS DISTRIBUTED AT THE 9-10 JULY EXCOM MEETING

1. Letter from N. Bogdanov to A. Maxwell, re: Russian participation and drillship
2. New Deep Sea Drilling Program in Japan
3. JOI/USSAC report
4. ODP Procedures and Policies with Respect to International Purchasing and Employment (as submitted from JOI, Inc. to NSF on December 15, 1991)
5. Science Operator Report
6. Preliminary report of *ad hoc* subcommittee (Dorman, Dürbaum, Falvey), supplemental information

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BUDGET COMMITTEE REPORT

17 AND 18 JANUARY 1992

BONN, GERMANY

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1. The Budget Committee met in Bonn, Germany on 17 and 18 January 1992. Members present were James Briden as Chair, Hans Durbaum, Arthur Nowell, Brian Lewis and James Austin. Tom Pyle and James Baker (JOI) attended; Philip Rabinowitz and Jack Baldauf (TAMU) and Roger Anderson (LDGO) were present for part of the time.

2. BACKGROUND

2.1 The Budget Committee (BCOM) was called to meet earlier than usual in the annual financial cycle because of deadlines imposed by NSF for receipt of a 4-year plan for renewal in USA. Its ability to address the years beyond FY 1993 was limited because the Science Plan for those years had not been completed due to the tight schedule. Uncertainty was compounded by doubt about the number of non-US members.

On NSF advice, BCOM operated using two alternative sets of Planning Figures:

(a) from the Long Range Plan (LRP), except that the figure for FY 96 was uprated by 4% on FY 95.
(b) a lower profile corresponding to six non-US members.

Both scenarios were based on an international subscription of approximately $2.9M per non-US partner from FY 94.

	FY93	FY94	FY95	FY96
LRP profile	45.3	48.3	50.9	52.9
Lower profile	43.2	45.4	48.0	50.0

2.2 Last year BCOM envisaged having also to consider a 'rundown' scenario of non-renewal of ODP beyond September 1993. In the event BCOM was advised by NSF that this was sufficiently unlikely that planning for operational rundown was not necessary. NSF has a contingency to handle the contractual consequences of shutdown, over a 12 month period. In this emergency situation, ODP Council and EXCOM would be reconvened. BCOM did not consider this scenario further in its meeting.

2.3 BCOM pays particular attention to efforts to advance drilling capability, core recovery and logging. The JOIDES Advisory Structure has indicated in recent years that to accelerate such developments at the rate necessary to address important problems requires allocations substantially greater than the 4% minimum Special Operating Expenses (SOE) set by EXCOM.

2.4 The addition of Russia as a member, together with enhancement of the US contribution, should have raised the ODP budget to LRP level in FY 92 for the first time, enabling important and exciting developments such as accelerated work on the Diamond Coring System (DCS), feasibility studies on deep drilling and additional platforms, and high-temperature

slimhole tool developments. At the time of the BCOM meeting, the Russian subscription from 1 January 1993 had not been received and opportunities such as these were 'on hold', to the frustration of PCOM and the ODP science community. The lower income profile for FY 93 and 94 is close to the minimum acceptable level calculated by BCOM in 1991, but will not allow substantial technical development.

3. PROPOSALS TO BCOM

3.1 The draft budgets proposed to BCOM (after withdrawal of an additional proposal from LDGO that was deemed to fall outside current guidelines) were (with FY 92 Program Plan for comparison):-

	FY93 proposal	FY92 Program Plan	
TAMU	$39,384,447	$35,805,000	+10.0%
LDGO	$ 4,996,593	$ 3,950,000*	+26.5%
JOI/JOIDES	$ 1,573,164	$ 1,450,000	+ 8.5%
MRC	nil	$ 70,000	-
Unallocated SOE	nil	$ 125,000*	-
NSF enhancement (held in reserve)	N/A	$ 2,100,000	-
Total	$45,954,204	$43,500,000	+ 5.6%

*most of the unallocated SOE is likely to be allocated to LDGO.

The bids were thus $654k above the higher (LRP) projected income. BCOM therefore had to determine reductions of that amount and also prepare contingency plans to reduce expenditure by a further $2.1M to the lower income level.

3.2 Following preparatory Private Session, presentations were made by TAMU, LDGO, JOI and the University of Washington JOIDES Office. TAMU and LDGO representatives attended only for presentation and initial discussion of their item; Nowell and Lewis withdrew for determination of the JOIDES Office allocation.

4. RECOMMENDATIONS

4.1 BCOMs summary recommendation is as follows (details and rationale are given in subsequent paragraphs):-

	PROPOSED	RECOMMENDED	
		LRP Budget	Lower Budget
	$k	$k	$k
TAMU: Base	35,671	35,521 [1]	
SOE	3,713	2,413 [2]	-1700[4]
LDGO: Base	4,341	4,320 [1]	
SOE	656	301	
JOI/JOIDES	1,573	1,560 [1]	
Held back for further consideration		1,185 [3]	- 400 [4]
Total	45,954	45,300	43,200

[1] Cuts of $150k, $21k and $13k in TAMU, LDGO and JOI/JOIDES base budgets are arbitrary, to 'balance the budget'

[2] $1300k bid for iceboat is treated separately, see note [3] below

[3] Slightly reduced provision for iceboat: held by JOI pending best contract. In the event of savings, surplus to be allocated to deep drilling, or Lamont processing backlog, subject to advice to JOI.

[4] See section 4.5

4.2 TAMU

The representatives from TAMU are to be congratulated for their well-organised presentation to BCOM, and for their realistic budget requests following JOI's direction. The FY 93 request of $39.4M included $3.71M of SOEs.

SCIENCE OPERATOR FY 93 PROPOSED BUDGET OUTLINE

	Base	SOE
Headquarters Administration	$1,979,722	
Science Services	$3,596,854	$ 388,000
Drilling & Engineering	$3,894,316	$1,600,000
Technical & Logistics	$4,398,273	$ 172,400
Science Operations	$1,251,882	$ 253,000
Ship Operations	$20,550,000	$1,300,000
TOTAL	$35,671,047	$3,713,400
GRAND TOTAL	$39,384,447	

Base Budget

During cursory review of the Base Budget outlines for FY 93 for each TAMU cost centre, BCOM noted that TAMU had only partially acted on PCOM's directive concerning increased computer and technical personnel on the ship. Moreover this had been achieved at the cost of ending some shipboard job-sharing with LDGO for FMS processing. TAMU and LDGO must solve this problem (see section 4.3). TAMU's achievement in bringing publications fully up to schedule is commended: relevant budgets are maintained in order that this achievement be continued. However, due to overall budgetary constraints, BCOM calls upon TAMU to make $150k savings from its proposed base-budget.

Special Operating Expenses

The SOEs presented to BCOM were logically arranged into two groups - those deemed absolutely necessary to fulfil the FY 93 science plan, and those suggested as beneficial for the continued success of ODP. Only a single $ number was presented for each of the SOEs and BCOM suggested that in future some detail be made available. BCOM recommends that, if the LRP budget level for ODP is maintained at $45.3M, funding for all TAMUs SOEs be provided at the requested level except for the Ice Patrol Boat, for which special arrangement is made below. The requests and recommendations, together with conditions attached to them, are as follows:-

	PROPOSED	RECOMMENDED (LRP budget)	RECOMMENDED (Lower budget)
DCS Phase II B	$500.0k	$500.0k	$500.0k
DCS Shipping	$172.4k	$172.4k	$172.4k
East Coast Repository	$ 38.0k	$ 38.0k	$ 38.0k
Computer Services	$350.0k)	603.0k, subject)	)
Shipboard Science	)	to further advice)	NIL
Equipment	$253.0k)	from PCOM)	)
DCS Phase III	$1100.0k	$1100.0k NB. TAMU has to receive sanction from JOI before incurring expenditure on fabrication	NIL, unless savings can be made elsewhere, see para 4.5
Ice Boat	$1300.0k	$1185k provision, to be held by JOI pending best contract. In the	

event of savings, surplus to be allocated to deep drilling or Lamont-processing backlog subject to advice to JOI from JOIDES.

While an ice boat is certainly required, BCOM insists that TAMU look most carefully at costs from different potential operators, including European academic and commercial operators, and also the possibility of Russian ice vessels. BCOM views this as an area where significant savings might be made. It therefore makes provision of $1185k (somewhat less than requested) and recommends that JOI holds this allocation pending negotiation by TAMU of the best possible contract. Should savings occur, BCOM recommends that the savings be used for other TAMU and/or LDGO SOEs. BCOM regarded the requested amount for Computer Services and Shipboard Science Equipment as provisional, pending further advice from PCOM.
In the event that a lower budget for the program of $43.2M is imposed, BCOM recommends that only the four top-rated SOE items (DCS II B, DCS shipping, East Coast repository and ice boat) be funded. Further, all base budgets, including engineering development on all tools and systems, should be evaluated and prioritized to ensure that the FY 93 program is not jeopardised.

FY 94 - 96
TAMU presented budgets roughly in line with projected increases in the higher (LRP) budget profile. BCOM comments on these in Section 5.
Demands on truly special operating expenses are likely to increase, so phased replacement of ageing drillpipe should henceforth be dealt with as far as possible within base budget.
An impending major issue concerns core repositories. It is clear that within approximately one year, both Gulf Coast and East Coast repositories will be approaching capacity and there will be a need for additional storage buildings. Capital costs should be a matter for host institutions, but EXCOM will need to press the case for new construction to be undertaken and should make increased provision for running costs.

4.3 LDGO
BCOM heard a report from Roger Anderson (LDGO), concentrating primarily on the FY 93 program and proposing the budget summarised below. In consultation with Anderson, BCOM defined the FY 93 base budget as $4,340,868 based on a negotiated 1-year extension of a previously applied Columbia University overhead rate of 42%; BCOM recommended $4320k (see para 4.1, footnote 1).

WIRELINE SERVICES OPERATOR FY 93 PROPOSED BUDGET OUTLINE

	Base	SOE
LDGO personnel and operations	$2,037,491	
Schlumberger contract	$1,851,384	$470,705
Televiewer lease	$ 105,000	
Tool insurance through JOI	$ 148,665	
FMS etc	$ 117,208	
Rockworks subcontract	$ 81,130	
Camborne subcontract	-	$185,020
Total	$4,340,868	$655,725

Base Budget

BCOM notes that the LDGO base budget increased by 9.9% from FY 92, a reflection primarily of increased personnel and material costs (notably an increase of 10 man-months for putting LDGO log data onto a digital data base at LDGO and related software on CD-ROM).

Anderson informed BCOM that he was considering a number of options for FMS processing. BCOM concluded that shipboard processing is highly desirable; recognising that new personnel will need to be recruited and/or trained, this budget-line request was recommended in full and LDGO should negotiate with TAMU to achieve the requirement.

Special Operating Expenses

	PROPOSED	RECOMMENDED
LDGO		
1. Schlumberger contract		
- MAXIS:	$ 155k	----
- processing nodes (LDGO, France, UK):	$ 200k	----
- new logging winch:	$ 116k	$ 116k
2. Camborne School of Mines (UK)/resistivity tool:	$ 185k	$ 185k
	Total SOE	$ 301k

While rejecting the SOE bid for three processing nodes, BCOM noted that the case was based partly on the accrual of a backlog in processing various types of logging data. LDGO is called upon to address this issue as far as possible within its allocated base budget. The possibility of bidding for some enhancement of this SOE, if savings are made elsewhere in ODP, is noted in this report (see TAMU - SOEs).

FY 94 - FY 96

Subsequent BCOM discussions with Anderson established that a 4% inflation rider on the FY 93 total was a reasonable basis for planning the continuation of the logging operation on its current lines.

Nonetheless, BCOM notes with great concern the impending overhead increase at Columbia University for FY 94 - FY 96, and the fact that both permanent equipment acquisition and data base expansion are inevitable during this interval if LDGO is to maintain an acceptable level of service to the scientific community. These facts will make increases to Wireline Services necessary, well in excess of the totals listed above.

4.4 JOI/JOIDES

	PROPOSED	RECOMMENDED
JOI	$561,739)	
G + A	$281,967)	$840k
JOIDES Office	$457,569	$450k
ODP Data Bank	$271,889	$270k
Total	**$1,573,164**	**$1560k**

The JOI and JOIDES budgets were approved subject to rounding-down for balancing purposes.

In the JOI presentation, it was noted that there will be a reduction of one half FTE in the JOI Office beginning 1 October 1992, thus the subtotal for this office could be kept nearly constant. The PEC III travelling activities and costs were much higher than those of former PECs; costs of future PECs should be constrained to a level similar to PEC II.

For JOIDES the Committee acknowledged that the workload of the Chairperson of PCOM exceeds 9 months per year and, therefore, the 9-month proposal for Brian Lewis should be accepted.

BCOM noted that EXCOMs agreement to pay travelling costs for the ad hoc Committee on sub contracts chaired by Craig Dorman from comingled funds should not be taken as a precedent.

4.5 LOWER FUNDING LEVEL FOR FY 93

At the risk of repetition we should emphasise that BCOM's recommendation in the event of cutback to $43.2M in FY 93 is to maintain the scientific program Plan for that year. Hence BCOM calls for a scrutiny of all Base Budgets, particularly Engineering Development and other 'forward planning' tasks, to achieve economies in excess of $400k. BCOM recommends that shipboard scientific equipment and computing upgrades, and DCS Phase III be halted, but that DCS be carried forward at a lower level should savings permit. The 'short-term'ism of this approach is emphasised at the end of this report.

5. LONG TERM BUDGET ISSUES: 1994 AND BEYOND

In the Long Range Plan, which served as the justification for ODP from 1993 onwards, costs were estimated on the basis of 1989 costs, plus an inflation factor. These estimated costs are now the target budget and it is appropriate to ask to what extent these estimates are still valid. In the 1993 program, it appears that the target of $45.3M is just adequate to meet the science and engineering goals. This highlights the importance of maintaining the recent increment in US funding. Any reduction in funding implies a reduction in science and engineering. BCOM urges all partners, US and non-US, to consider their ability to augment their subscription to ODP, to offset the effect that loss of a seventh non-US member would have on the Program.

For 1994 and beyond, there are a number of factors which seem to suggest that the target figures (which assume 7 international partners) are on the low side. Some of these variables are:

1. Knowledge of a detailed drilling program. The JOIDES planning process will only produce a detailed 1994 plan at the end of 1992 and will follow a similar pattern in succeeding years. As the detailed drilling plans mature there is the possibility that science requirements may stress the system e.g. ice boats, guidebases and, particularly, additional platforms.

2. The role of the DCS in the 1994 - 96 time period, and the engineering development costs needed to make it an operational system, are not firmly founded.

3. The costs of engineering developments related to the DCS (such as slimhole logging) and of other engineering costs are not well known.

4. Core repositories: by the end of 1992 the TAMU core repository will be full, and by the end of 1993 the LDGO facility will be in a similar situation. Costs related to expansion of the repositories (or building new ones) have not been identified.

5. Computing: the computer system on the Resolution was state-of-the-art when it was acquired in the mid-80's. It is now inadequate and no longer compatible with much user software. An upgrade will be necessary in the near future and this upgrade may well include bi-directional data telemetry to land. This conversion will be costly in hardware, manpower and time.

6. The user base: ODP to date has been remarkably successful. One yardstick of this success has been the increase in users of data from logs and cores. This has placed unforeseen demands on the suppliers of these data and an increasing manpower stress on LDGO and TAMU. Yet this is an area where expansion is necessary. Modern day computer communications, data analysis and data access offer a way of improving user access but there is, of course, a cost implication of uncertain size.

7. Although the program for 1994 and beyond, as well as the 1993 program, is based on an assumption about renewal by the members of the ODP, the level of renewal is not assured. This is another variable with a potentially devastating impact.

In summary, the issue is the minimum funding level for maintaining a viable and justifiable science program. Items such as DCS, computers, core repositories, data distribution and access, and engineering development are the subject of discussion by the JOIDES advisory structure. As JOIDES advice is received in these areas, the budget implications must be analyzed in a timely fashion so that appropriate actions and recommendations can be invoked by EXCOM.
It is important to realise that the cutbacks recommended by BCOM in this report, in the event of a reduction from $45.3M to $43.2M in FY 93, represent a short term solution which will not address the long term problem: indeed, they would aggravate it.

6. ACTION

BCOM requests JOI to initiate further discussions with the subcontractors and JOIDES advisory structure to develop the 1993 program plan and budget, compatible with the recommendations in this report.

JOIDES PLANNING COMMITTEE SPRING MEETING
21 - 23 April 1992
Oregon State University
Corvallis, Oregon

DRAFT MINUTES
(May 18, 1992)

Planning Committee (PCOM)

J. Austin, Chairperson - University of Texas at Austin, Institute for Geophysics
K. Becker - University of Miami, Rosenstiel School of Marine and Atmospheric Science
H. Beiersdorf (for U. von Rad) - Bundesanstalt für Geowissenschaften und Rohstoffe (Germany)
W. Berger - University of California, San Diego, Scripps Institution of Oceanography
M. Cita-Sironi - University of Milan (ESF Consortium)
R. Duncan - Oregon State University, College of Oceanography
J. Fox - University of Rhode Island, Graduate School of Oceanography
R. Kidd (for H. Jenkyns) - University of Wales, Cardiff (United Kingdom)
Y. Lancelot - Université Pierre et Marie Curie, Paris (France)
M. Langseth (for J. Mutter) - Columbia University, Lamont-Doherty Geological Observatory
B. Lewis - University of Washington, College of Ocean and Fishery Sciences
J. Malpas - Memorial University (Canada-Australia Consortium)
A. Sharaskin - Geological Institute, Moscow (Russia)
A. Taira (absent, no alternate) - Ocean Research Institute (Japan)
B. Taylor - University of Hawaii, School of Ocean and Earth Science and Technology
B. Tucholke - Woods Hole Oceanographic Institution
J. Watkins - Texas A&M University, College of Geosciences

Liaisons

T. Francis and M. Storms - Science Operator (ODP-TAMU)
M. Lyle - Wireline Logging Services (ODP-LDGO)
B. Malfait - National Science Foundation
T. Pyle - Joint Oceanographic Institutions, Inc.

Guests and Observers

R. Arculus - University of New England (Canada-Australia Consortium)
R. Batiza - University of Hawaii, School of Ocean and Earth Science and Technology (Co-Chief, Leg 142)
J. Byrne - Oregon State University, College of Oceanography
I. Gibson - University of Waterloo (DH-WG Chair)
S. Lewis - US Geological Survey, Menlo Park, California (Co-Chief, Leg 141)

JOIDES Office (University of Texas at Austin, Institute for Geophysics)

P. Blum - Executive Assistant and non-US Liaison
C. Fulthorpe - Science Coordinator

SELECTED ACRONYMS AND ABBREVIATIONS

AGU	American Geophysical Union
AMC	axial magma chamber
ARC	Australian Research Council
BGR	Bundesanstalt für Geowissenschaften und Rohstoffe
BGS	British Geological Survey
BHA	bottom-hole assembly
BHTV	borehole televiewer
BIRPS	British Institutions Reflection Profiling Syndicate
BMR	Bureau of Mineral Resources
BRGM	Bureau de Recherches Géologiques et Minières
BSR	bottom-simulating reflector
CSDP	Continental Scientific Drilling Program
CSG	Computer Services Group (ODP)
CY	calendar year
DCB	diamond core barrel
DCS	diamond coring system
DEA	Drilling Engineering Association
DFG	Deutsche Forschungsgemeinschaft
DI-BHA	drill-in bottom-hole assembly
DOE	Department of Energy
DP	dynamic positioning
DPG	Detailed Planning Group
ECOD	European (ESF) Consortium for Ocean Drilling
EEZ	Exclusive Economic Zone
EIS	environmental impact statement
ETH	Eidgenössiches Technische Hochschule, (Zürich)
FDSN	Federation of Digital Seismic Networks
FMS	formation microscanner
FY	fiscal year
GSGP	Global Sedimentary Geology Program
HRB	hard rock guide base
HRO	hard rock orientation
IDAS	isothermal decompression analysis system
IFREMER	Institut Français de Recherche pour l'Exploitation de la Mer
IGBP(/PAGES)	International Geosphere/Biosphere Program (/Past Global Changes)
ILP	International Lithosphere Program
IOC	Intergovernmental Oceanographic Commission
IPR	intellectual property rights
IRIS	Incorporated Research Institutions for Seismology
JAMSTEC	Japan Marine Science and Technology Center
JAPEX	Japan Petroleum Exploration Company
JGOFS	Joint Global Ocean Flux Studies
JOI-BOG	JOI Board of Governors
KTB	Kontinentales Tiefbohrprogramm der Bundesrepublik Deutschland
LANL	Los Alamos National Laboratory
LAST	lateral stress tool
LBL	Lawrence Berkeley Laboratory
LIPS	large igneous provinces
LRP	Long Range Plan
mbsf	meters below seafloor
MCS	multi-channel seismic
MDCB	motor-driven core barrel
MOU	memorandum of understanding
MRC	Micropaleontological Reference Center
MST	multi-sensor track
NADP	Nansen Arctic Drilling Program
NAS	National Academy of Sciences
NERC	Natural Environment Research Council
NGDC	National Geophysical Data Center
NSB	National Science Board
NSERC	National Scientific and Engineering Research Council (Canada)
OBS	ocean bottom seismometer
ODPC	ODP Council
OG	organic geochemistry
ONR	Office of Naval Research
OSN	Ocean Seismic Network
PCS	pressure core sampler
PDC	poly-crystalline diamond compact (drilling bit)
PEC	Performance Evaluation Committee
PPI	Producer Price Index
RFP	request for proposals
RFQ	request for quote
RIDGE, InterRIDGE	Ridge Inter-Disciplinary Global Experiments (US and International)
SCM	sonic core monitor
SES	sidewall-entry sub
SNL	Sandia National Laboratory
SOE	Special Operating Expense
STA	Science and Technology Agency (of Japan)
TAMRF	Texas A&M Research Foundation
UDI	Underseas Drilling, Incorporated
USSAC	US Scientific Advisory Committee
USSSP	US Science Support Program
VPC	vibra-percussive corer
VSP	vertical seismic profile
WCRP	World Climate Research Program
WG	Working Group
WOCE	World Ocean Circulation Experiment
WSTP	water sampler, temperature, pressure (downhole tool)

JOIDES Committees and Panels:

BCOM	Budget Committee
DMP	Downhole Measurements Panel
EXCOM	Executive Committee
IHP	Information Handling Panel
LITHP	Lithosphere Panel
OHP	Ocean History Panel
OPCOM	Opportunity Committee (disbanded)
PANCHM	Panel Chairs Meeting
PCOM	Planning Committee
PPSP	Pollution Prevention and Safety Panel
SGPP	Sedimentary and Geochemical Processes Panel
SMP	Shipboard Mearurements Panel
SSP	Site Survey Panel
STRATCOM	Strategy Committee (disbanded)
TECP	Tectonics Panel
TEDCOM	Technology and Engineering Development Committee

DPGs and WGs:

A&G-DPG	Atolls and Guyots DPG (disbanded)
DH-WG	Data-Handling WG
NAAG-DPG	North Atlantic-Arctic Gateways DPG (disbanded)
NARM-DPG	North Atlantic Rifted Margins DPG (disbanded)
OD-WG	Offset Drilling WG
SL-WG	Sea-Level WG

FY93 Programs:

NAAG-I	North Atlantic Arctic Gateways, first leg (Leg 151)
NARM non-volcanic-I	North Atlantic Rifted Margins non-volcanic, first leg (Leg 149)
NARM volcanic-I	North Atlantic Rifted Margins volcanic, first leg (Leg 152)
NJ/MAT	New Jersey / Middle Atlantic Transect (Leg 150)

FY92 Programs:

A&G	Atolls and Guyots (legs 143/144)
CA	Cascadia margin (Leg 146)
CTJ	Chile Triple Junction (Leg 141)
EPR	East Pacific Rise (Leg 142)
HD	Hess Deep (Leg 147)
NPT	North Pacific Transect (Leg 145)
504B	(Deepening) Hole 504B (Leg 140)

JOIDES PLANNING COMMITTEE SPRING MEETING
21 - 23 April 1992
Oregon State University
Corvallis, Oregon

EXECUTIVE SUMMARY

PCOM Motions

PCOM approves the minutes of the 4 - 7 December 1991 PCOM meeting. (p. 6.)

PCOM adopts the agenda for the 21 - 23 April 1992 PCOM meeting. (p. 7.)

In view of the results of Leg 142 and to allow for their proper evaluation, PCOM confirms: 1) a postponement of further engineering test legs of DCS on *JOIDES Resolution*, and 2) that Leg 148 will be a return to Hole 504B in order to deepen that hole and carry out attendant logging operations. (p. 33.)

PCOM, recognizing the need to develop a high-recovery system for coring difficult formations, requests ODP-TAMU to prepare for the August 1992 PCOM meeting a detailed plan to bring the diamond coring system (DCS) to operational status. This plan should include an analysis of previous work as well as an estimate of future costs. PCOM will use this information to decide the future of DCS development in ODP. (p. 34.)

Based upon advice by ODP-TAMU engineers, PCOM considers the following tools now operational: CORK, PCS I and MDCB. Their use should be encouraged by the Science Operator and the appropriate panels, with care that appropriate financial planning is in place.

PCOM now prioritizes engineering developments as follows:

1) System developments:
   a) DCS evaluation and improvements.
   b) Engineering developments for core-log integration, including TOTCO, core orientation and sonic core monitoring.
   c) Deep drilling system/capability.
   d) Improvements in existing coring techniques, i.e., APC , XCB and RCB.
2) Leg-specific developments:
   a) Vibra-percussive corer in preparation for legs 146 and 150. (p. 39.)

PCOM supports the DataNet concept as outlined in the White Paper prepared by ODP-LDGO, Wireline Logging Services Operator, to improve real-time core-log integration and data reduction, interpretation, archiving and dissemination. (p. 43.)

PCOM endorses the DH-WG recommendations, as contained in DH-WG's minutes of 5 - 6 March 1992, and requests of I. Gibson a list of possible candidates for a steering committee that will continue to work with ODP-TAMU on this issue. ODP-TAMU and the steering committee should jointly prepare a report for PCOM outlining the likely costs and implementation schedule to achieve the recommendations of DH-WG. This report should be presented at the August 1992 PCOM meeting. (p. 46.)

PCOM commends the panels for prioritizing their needs regarding non-engineering items and recommends to JOI, Inc. to take appropriate action contingent upon availability of funds. As some of the items require but modest investment it is anticipated that corresponding needs can be met in a timely manner. (p. 47.)

PCOM sets the direction of the drilling vessel for the next four years as follows:

1) In the remainder of FY92, confirmed as is in the current Program Plan.

2) In FY93, and beyond to November 1993, confirmed as is in the Program Plan approved at its December 1991 meeting in Austin, Texas, through Leg 152, East Greenland Margin, ending on or about 28 November 1993.

3) In the remainder of FY94 through April 1996, in the Atlantic Ocean and adjacent seas* and the eastern Pacific. FY94 program to be finalized in December 1992 at the Annual Meeting of PCOM with Panel Chairs.

PCOM reaffirms its stand that at its Spring 1993 meeting, and at subsequent meetings, it will evaluate again the state of panel recommendations, technological developments, and the overall state of ODP, and again set the general direction of the drilling vessel for the subsequent four years, with a relatively firm early track and a relatively flexible later direction.

* Defined as Caribbean, Gulf of Mexico, Mediterranean, Norwegian (including near-Arctic Ocean), Labrador, Red Sea. (p. 51.)

PCOM views the Santa Barbara Basin site as an exceptional scientific opportunity to obtain an important climate record at a logistically-convenient time. PCOM, therefore, approves the addition of a total of 24 hours to Leg 146 to allow drilling of this site at the end of this leg, contingent upon passing safety review. To maintain the schedule of subsequent Atlantic drilling, which is weather-dependent, Leg 148 will be shortened by 24 hours. PCOM nevertheless expresses strong concern about the lateness of the OHP request to drill this site and notes that, in the future, such requests normally will not be considered later than one year pre-cruise. (p. 55.)

PCOM moves that the primary objective of Leg 149 be a deep hole at Site IAP-1. (p. 57.)

PCOM endorses the DMP guidelines for third-party tools, except that the wording on page 4, paragraph (iii) be changed to read:
"If DMP proposes and PCOM endorses the Mature Tool Proposal, the Science Operator or Logging Contractor will progress the acquisition of the tool for ODP provided funds are available." (p. 68.)

PCOM Consensuses

PCOM endorses the proposal by designated Leg 150 Co-Chiefs that core to be collected as part of a proposed land drilling effort extending the NJ/MAT transect be treated as one with Leg 150 cores. (p. 57.)

PCOM endorses all personnel actions taken at the 1992 Spring Meeting. (p. 63.)

Spring Meeting JOIDES PCOM
Tuesday, 21 April 1992

941. Welcome and Introduction

Austin called the 1992 Spring Meeting of JOIDES PCOM to order at 9:00 AM. Duncan introduced J. Byrne, President of Oregon State University.

Byrne recalled being at NSF when the first DSDP leg had drilled the Sigsbee Knolls, with Maurice Ewing as co-chief scientist. That the project had lasted almost 25 years, first as DSDP and later as ODP, was a tribute to the scientists involved. Byrne commended PCOM and expressed the hope that ODP would continue long into the future. He concluded by welcoming PCOM to Oregon State University.

Duncan explained meeting logistics. Austin explained that Taira, Japanese PCOM member, had been unable to attend the meeting and had expressed his regrets. Austin called for introductions.

942. Approval of Minutes of 4 - 7 December 1991 PCOM Meeting

Austin called for comments, corrections and approval of the minutes of the 4 - 7 December 1991 PCOM Meeting held at the University of Texas at Austin. The minutes included modifications received by the JOIDES Office through 10 April 1992.

PCOM Motion

PCOM approves the minutes of the 4 - 7 December 1991 PCOM meeting.
Motion Taylor, second Langseth Vote: for 15; against 0; abstain 1; absent 1

943. Approval of Agenda

Austin stated that the main purpose of the Spring Meeting was to plan the general direction of *JOIDES Resolution* for the next four years. Other important, but subordinate, purposes were: to decide matters related to various reports from liaisons to PCOM, from PCOM liaisons to thematic/service panels and to existing WGs (except DH-WG; see below), to hear recent scientific results from drilling off Chile (Leg 141) and scientific/engineering results from DCS IIB testing on the East Pacific Rise (Leg 142), particularly as Leg 142 bears on the fate of Leg 148, presently scheduled as a further test of DCS IIB, to review PCOM's 1991 prioritization of engineering systems (particularly in light of Leg 142) and incorporate advisory panel input on non-engineering equipment needs, to hear a report from the DH-WG and discuss/take action on its recommendations, to make any adjustments in the planning structure necessary to prepare for the next four years in general and for Fiscal Year 1994 (FY94) in particular (~ late November, 1993 - late September, 1994), and to conduct routine PCOM business. Austin noted that, unlike the previous year's Spring Meeting, engineering prioritization would be discussed prior to setting the four-year general ship direction, because engineering developments would be particularly relevant to ship scheduling for FY94 and beyond.

Austin called for any additions to the agenda. Beiersdorf asked to be allowed to introduce results of work on the German high-temperature magnetometer. Austin replied that the presentation could be given after the DMP report. Cita-Sironi requested permission to brief PCOM on progress in coordinating Mediterranean drilling proposals. Taylor asked that discussion of Leg 149 (NARM non-volcanic I) objectives be added to the agenda. Austin

agreed to include these items under Old Business; Continuing Issues. He called for adoption of the agenda.

PCOM Motion

PCOM adopts the agenda for the 21 - 23 April 1992 PCOM meeting.
Motion Malpas, second Duncan Vote: for 16; against 0; abstain 0; absent 1

944. ODP Reports by Liaisons to PCOM

EXCOM

Austin reported that EXCOM had last met on 14-16 January 1992 in Bonn, Germany. The main item of discussion had been the report of the EXCOM *ad hoc* Committee on Long-Term Organization and Management of ODP, by J. Briden (Agenda Book, white pages 89-104). Austin outlined the recommendations of the report (Appendix 1 and Agenda Book, white pages 102-104). EXCOM had asked that PCOM provide input on the holding of regular and open scientific conferences on ODP and how to feed results of such conferences back into the JOIDES advisory structure [recommendation (i)]. Discussions underway concerning internationalization of JOI, Inc. [recommendation (iv)] and internationalization of the JOIDES Office [recommendation (v)] would be discussed by EXCOM at its meeting in June 1992. EXCOM had formed a subcommittee, comprising C. Dorman, D. Falvey and H. Dürbaum, to consider existing subcontracts, their possible modification, and to assess interest among JOIDES members in bidding for subcontracts [recommendations (vi), (vii), (viii) and (ix)]. The subcommittee would also consider incorporation of new drilling vessels [recommendations (xiii) and (xv)]. Reports on new drilling vessels had been presented in Bonn by French, Japanese and Russian representatives, but funding situations remained cloudy. PCOM would address specific bids, provided by SEDCO, for use of additional platforms for NJ/MAT (Leg 150) and on MIT Guyot in the Western Pacific (A&G). JOI, Inc. and EXCOM were also setting up a group, analogous to PEC, to review the JOIDES science advisory structure [recommendations (x), (xi) and (xii)]. The group would meet later in 1992. Lancelot noted that the French evaluation committee had made a parallel recommendation, i.e., splitting PCOM into committees for planning the ship schedule and for science. He wondered where that recommendation might be discussed. Austin replied that the setting up of the EXCOM group was moving slowly. Its report would go first to EXCOM, then to JOI, Inc. and the international partners. Implementation had not yet been discussed.

Francis noted that the Briden Report (on Agenda Book, white page 91) stated that ODP was focused on a single facility which took up about 50% of total funds annually. Francis pointed out that the true figure was 75%, adding that it was important not to be misled and overly optimistic about the money available for additional platforms. Austin informed PCOM that a proposal for a study of additional platforms had been requested and received from a consultant, H. Zaremba. The proposal discussed dependent and independent options and had received mixed reviews. The SEDCO bids for additional platforms (Agenda Book, white pages 394-396) were for separate, independent facilities.

Austin went on to report that EXCOM had heard latest estimates on renewal. UK had committed to renewal, as had Australia, and efforts were underway elsewhere. Decisions were expected during the spring and summer.

Discussion

Malpas registered concern about the Dorman subcommittee request for interest in bidding for subcontracts. The Canadian ODP Secretariat had received the request only three working days before expressions of interest were due. There had been no warning that the requests were coming and it had not been clear whether they were for expressions of interest (which was the case) or for formal proposals (RFP). Malpas said that some organizations had had prior knowledge of the requests and that some US institutions had received their requests two weeks before Canada. He felt that the initiative should have been brought before the service panels, in particular, and also before the thematic panels. Furthermore, PCOM had not seen the request. Malpas thought that the action brought into question the way ODP was run, adding that there should have been due consultation. Lewis stated that some of the points in the Briden Report required modification and that EXCOM should have asked PCOM to comment.

Austin responded that he represented PCOM at EXCOM and that he had endorsed EXCOM's activities. The intent had been to request statements of interest and not an RFP. EXCOM was now moving on these issues and Austin applauded that. The Briden Report had galvanized EXCOM. He would, however, take Malpas' complaint to EXCOM. PCOM would have the opportunity at this meeting to comment on the Briden Report (under New Business). Berger remarked that SIO had also been concerned about the short time allowed for a response to the Dorman subcommittee's request, though they had had longer than three days. Kidd agreed, adding that it had not been clear that the request had been for only a statement of interest. Austin replied that there had been some need for the Dorman subcommittee to "separate the wheat from the chaff" and to ensure that it received legitimate statements of interest and ability. Beiersdorf felt that the Dorman subcommittee's request represented an initial phase with the purpose of promoting discussion. He added that Lewis was correct, however, in stating that PCOM should be part of the discussion. Austin explained that it was intended to restrict the bidding process to countries and institutions already involved in ODP. Inclusion of outside institutions would require a formal RFP costing ~$1M, according to JOI, Inc.

Kidd recommended that service panels be asked to comment on the reports from Briden and the Dorman subcommittee. Austin replied that all Panel Chairs had received the PCOM Agenda Book and would have the opportunity to comment. The Dorman subcommittee would report in June, but after that the timeframe for EXCOM action was not clear. Lewis suggested that PCOM also discuss the science advisory structure review panel. Austin replied that PCOM would return to the issue later in the meeting and could make a recommendation at that time.

Austin asked non-US PCOM members whether there were any comments on renewal issues. Lancelot replied that France had completed about six evaluations. They had been generally positive. The problem would be in getting a commitment to five years. Renewal for some period of between three and five years was likely. Malpas stated that Australia had committed to a three-year renewal. Canada had completed its evaluations and he hoped that a five-year commitment would be forthcoming within the next month. Cita-Sironi notified PCOM that a formal ESF meeting had been held in Strasbourg. Italy and Switzerland were increasing their contributions to ESF and the Netherlands was decreasing theirs, though remaining involved. No official renewal document had yet been written. Beiersdorf reported that DFG had sent an official letter to the Federal Ministry of Science and Technology inviting the ministry to rejoin ODP. He expected a positive reaction. Sharaskin had no information on Russian renewal. In the absence of the Japanese PCOM member, Austin stated that he had heard both positive and negative comments on renewal from Japan. Japan had been having recent difficulty getting members to panel meetings.

BCOM

Austin reported that BCOM had been instructed to consider scenarios involving both six and seven international partners. BCOM had made some comments regarding minimum and acceptable levels of funding. A commitment to engineering development would not be feasible with only six international partners and funds for computer upgrades would also be in jeopardy. Taylor asked about the permanence of OPCOM funds. Austin felt that such discussion should be deferred until after the NSF and JOI, Inc. reports.

NSF

Malfait outlined NSF's timetable (Appendix 2). NSF had officially invited the international partners to continue their participation in ODP, but had received very few responses. The UK had committed to renewal. IFREMER was considering a three-to-four-year commitment. Lancelot commented that France would not commit to a five-year renewal because of issues related to NEREIS. France just wished to ensure that NEREIS could be incorporated into ODP even if it was operational before 1998. Malfait reported that Canada had asked for a two-month delay. Nothing had been received from Japan (though unofficial comment had been positive), or from ESF and Russia. NSF intended a ten-year renewal, with an initial commitment to five years, during which the post-1998 program would be evaluated.

NAS review of the LRP had been completed and would be mailed to PCOM members. An NSF panel would meet during the week following PCOM to review the four-year program plan. The plan would then be taken to the NSB with a recommendation for extension of ODP and approval of the budget for the first three years.

The FY92 budget had been approved at $41.4M and increased by $0.15M to cover extra costs. Status of OPCOM funds remained uncertain. JOI, Inc. had requested the additional $2.1M using the June 1991 OPCOM minutes as justification. Changes in ODP since the OPCOM meeting, however, had created inconsistencies, so NSF had told JOI, Inc. that further consideration of OPCOM's recommendations was warranted. Uncertainty over the eventual number of international partners also remained a problem. Malfait contrasted the estimated FY92 budget of $41.5M to the LRP FY92 budget of $43.6M. NSF was committed to maintaining the budget at $41.5M whether there were six or seven international partners. If there were only six partners, NSF would have to come up with additional funds and an OPCOM increment would be doubtful. With six international partners, NSF could meet projected budgets for FY93 and FY94, but not LRP budget levels.

The FY93 NSF budget was under consideration by the US Congress (Appendix 2). A 17.6% total increase had been requested. This would include a 3.9% increase for ODP, designed to cover inflation.

R/V Knorr and *R/V Melville* were back in service after being stretched. *R/V Knorr* had already completed a cruise. *R/V Washington* was at sea, but would be retired in spring 1992. *R/V Nathaniel Palmer*, a new icebreaker, was now in Antarctic service. The FY93 budget included funds for an Arctic vessel. *R/V Knorr* was likely to replace *R/V Atlantis II* as *DSRV Alvin* support ship.

The NSF budget for ODP science activities was $11.2M (Appendix 2). This comprised $4.7M for USSSP/USSAC and $6.5M for grants (including $2.3M in ship operations costs). NSF/ODP and earth sciences programs were jointly considering proposals for an OSN pilot experiment and for New Jersey drilling related to NJ/MAT (Leg 150).

FY92 field programs, together with those already scheduled for FY93, are listed in Appendix 2. Proposals for additional FY93 projects were expected in May.

Discussion

Lancelot asked for information about the planned Arctic vessel. Malfait said that it would not be a high-Arctic icebreaker, but a multi-purpose ship capable of breaking ice 3-4 ft thick. There had not yet been a detailed design study. Langseth reported that a preliminary design study had begun and that he was on the committee. Responding to a question from Lewis, Malfait said that JOI, Inc. had submitted four-year plan budgets for scenarios of both six and seven international partners. The FY93 budget would be closer to the lower figure (not the LRP figure) if there were only six international partners. In reply to a question from Beiersdorf, Malfait stated that NSF wanted a commitment to renewal for a minimum of five years.

JOI, INC.

Pyle announced that the four-year program plan (FY93-FY96) had been completed on March 17. It would be reviewed by NSF on 28-29 April and by the NSB in August. Four-year program plan budgets were prepared for scenarios involving both seven (LRP budget level) and six international partners (Appendix 3). The seven-partner budget contained a large amount of SOE money, but may be a "pipe dream". With six partners, flexibility was reduced. Computer services, shipboard scientific equipment and DCS III would drop out as FY93 SOEs (Appendix 3) if the budget was at the six-partner level. FY94-FY96 SOE estimates (Appendix 3) would remain speculative until real budgets were known. PCOM might also be faced with cutting additional items at its August 1992 meeting.

Little progress had been made in organizing a liaison group with IGBP/PAGES, but NSF (Atmospheric Sciences) had now expressed interest in promoting such a liaison. Pyle continued working with continental scientific drilling programs and had recently attended a related scientific symposium in Paris.

Pyle went on to discuss the status of high-temperature tools (criteria of Lysne, Worthington and Pyle, 1990). Water sampler: a proposal had been sent to DOE from Sandia for a downhole sampler; funding was probable in FY93; ODP was responsible for uphole components. In response to a question from Francis, Pyle said that the water sampler would be an improvement of the current sampler rather than a new tool. Temperature measurements: the Sandia tool had been used on Leg 139; precision pressure measurement (0.005%) was to be incorporated; the French (BRGM) tool and cable were to be tested. Independent of ODP money, some slimline, high-temperature modular memory tools were being developed at Sandia. These tools did not require an electrical connection to the surface. In about one year, a dewared computer would be ready, to which could be added various modules, initially spectral gamma (to measure Potassium-, Uranium- and Thorium-series elements) with radioactive gamma and neutron sources in the future.

Expressions of interest had been received in response to requests sent out by the Dorman EXCOM subcommittee. Members of the subcommittee had visited France on 11 April to discuss logging and Russia on 13-16 April to discuss drilling technology and logging.

No problems were envisaged in principle with the internationalization of JOI, Inc. Discussions were proceeding. Similarly, internationalization of the JOIDES Office was felt to be feasible, based in part on comments received from past JOIDES Office personnel. Austin asked when the first international JOIDES Office might be set up. Pyle replied that the next move of the JOIDES Office, to the University of Washington, would complete the circuit of US JOIDES institutions. Therefore, it would be appropriate to try an international JOIDES Office after the University of Washington.

JOI, Inc. badly needed PCOM advice on several items: a) the OPCOM situation, b) DCS future and timetable, and c) computing and databases, including impact of possible subcontracting recommendations.

In conclusion, Pyle noted the following JOI, Inc. personnel items: R. Smith would be leaving JOI, Inc. in late June and E. Kappel would be taking family leave ~1 July.

Discussion

In response to a question from Storms, Pyle said that the high-temperature tool being developed by R. von Herzen (WHOI) was funded by NSF. Austin noted that the OPCOM issue would come up again. People would be reluctant to provide further volunteer efforts for deep-drilling and pore-fluid sampling studies if money for implementation was not available. Taylor added that, in addition, certain drilling programs would not be possible if some technological developments had to be dropped. Austin concluded that PCOM would have to address the issue before considering the four-year schedule.

SCIENCE OPERATOR (ODP-TAMU)

Francis recalled that the last PCOM meeting had occurred while Leg 141 (CTJ) was in progress. Leg 141 lost ~4 days as a result of two medical evacuations. MDCB had been successfully tested in Hole 863B (Appendix 4). It had behaved as expected and was ready to work with GEOPROPS. Also in Hole 863B, the pipe became stuck. A kink was put into the pipe ~50 m above the seafloor during attempts to free it. The pipe was straightened by pulling before the hole could be logged, but the pipe was severed after logging with the loss of $18000 of equipment.

Leg 142 (Engineering/EPR; Appendix 4) required a great deal of equipment to be shipped to *JOIDES Resolution*, with the result that the leg began ~0.5 day late. DCS had been a disappointment; it would be discussed further later in the meeting. Leg 142 ended a day early.

Leg 143 (A&G I) sailed on 22 March. Clearance from the Marshall Islands was obtained on 24 March. RCB holes were being drilled before APC/XCB holes because deeper objectives were considered more important. At Allison-A (Appendix 4), recovery in rubbly lagoonal limestone, below the pelagic cap, was <1% during the course of 600 m of penetration. Recovery improved in the bottom 100 m. Nine days had been spent on the site. Logging had gone well. At Huevo Guyot (Appendix 4), basement had been encountered at 1620 mbsf, although it had

been expected at 960 mbsf. Penetration had reached 1720 mbsf and recovery rate was 50-60% in basalt. Taylor noted that this would be the deepest hole drilled by ODP. Francis added that recovery rate had improved with depth at Huevo, being poor at shallow depths, but improving to 20-40%. The shipboard party had formally proposed to rename this guyot Resolution Guyot. A charter flight to Majuro would bring Leg 144 personnel and immediately remove Leg 143 personnel in order not to overload limited accommodations there.

Clearance from Japan was expected shortly for drilling on Seiko Guyot by Leg 144 (A&G II). In reply to a question from Taylor, Francis explained that late clearances were normal, even when member countries were involved. A US Navy installation on Seiko had been an extra complication.

Leg 145 (NPT; Appendix 4) had been discussed by PPSP. The prospectus had been published and staffing was essentially complete.

Most Leg 146 (CA) sites had been approved by PPSP. Leg 141 results had been helpful in that respect. Staffing was 85% completed. The large number of downhole tools and measurements on Leg 146 meant that it would be difficult to drill >6 sites. Drilling of even 6 sites will probably require elimination of the geochemical logging program. PCS, MDCB, GEOPROPS (which seemed to be on course for readiness in July) and CORKs (at two holes) would all be deployed. Austin drew PCOM's attention to a letter from B. Carson (Leg 146 co-chief) describing how Leg 146 would be impacted by the loss of 1.5 days required to replace the thermistor string at CORKed Hole 857D drilled on Leg 139.

Francis noted that K. Gillis and C. Mevel had been appointed co-chiefs for Leg 147 (HD). (A list of co-chiefs for upcoming legs is included in Appendix 4.) No staffing had yet taken place.

Leg 148, currently scheduled as Engineering DCS IIB with a back-up of Hole 504B, required a PCOM decision at this meeting.

Leg 149 (NARM non-volcanic I) co-chiefs were D. Sawyer and R. Whitmarsh. Concern that there would be insufficient time to drill the proposed three sites in 5000 m of water had led to some adjustments being made in the ship schedule.

PPSP had expressed some concern about the possibility of encountering shallow gas on Leg 150 (NJ/MAT). Shallow water over the sites compounded the problem. G. Mountain (Leg 150 co-chief) was trying to obtain all available high-resolution seismic data. Taylor asked whether an environmental impact statement (EIS) would be required. Francis replied that ODP did not file EISs for legs in US waters. ODP as a whole had an EIS. Austin commented that there was a lot of high-resolution seismic data available from the area and that Mountain had acquired it. Austin did not know whether it would prove sufficient to answer the safety concerns. Francis added that the concern was possible presence of gas in the upper 100-200 m. Austin pointed out that Leg 150 might be modified by PCPM, or perhaps even delayed, at the 1992 Annual Meeting if the problem had not been solved.

Francis went on to discuss Leg 151 (NAAG I). NADP, at a February meeting with ODP, had expressed the wish to push *JOIDES Resolution* as far north as possible (Appendix 4). SEDCO was deciding how much ice could be tolerated during drilling operations in the presence of an icebreaker. A RFP for a support ship would be required by December 1992. Austin pointed out that OHP had recommended an icebreaker, rather than simply an ice-support ship. PCOM

would have to discuss that recommendation, which had fiscal impact. Francis said that some options had been discussed. *Oden*, a powerful Swedish icebreaker (Appendix 4), would cost $1.8M for 6 weeks or $1.4M for 4 weeks. Langseth asked whether a Russian icebreaker could be used. Francis replied that there were a number of possible vessels. Lancelot suggested consideration of the French ship *Astrolabe*, a less powerful icebreaker than *Oden*, as a compromise. Francis explained that the advantage of *Oden* was that it could create a channel wider than *JOIDES Resolution*. Austin, however, noted that BCOM had stated that a cheaper ship should be found to enable the money saved to be spent on computer systems, etc. PCOM, therefore, had a choice to make.

Francis presented a revised, draft ship schedule for the remainder of FY92 and FY93. It assumed that Leg 148 would be 504B, split into three "mini-legs": two to allow a change of SEDCO crew at Panama, and one comprising a transit to Lisbon. Leg 150 (NJ/MAT) would begin in Lisbon in order to provide extra on-site time to Leg 149 (NARM non-volcanic I). *JOIDES Resolution* would not be required to enter dry dock until after the start of CY93. Austin added that Leg 150 could now expect 41-42 days on site. Francis noted that the changes to the schedule meant that Leg 151 (NAAG I) would slip by ~6 days. He did not wish it to slip further because of its limited weather window.

Francis informed PCOM that J. Baldauf had been appointed as the new Manager of Science Operations at ODP-TAMU. The organizational structure for shipboard technical support had been changed to increase the number of marine computer specialists (there were now six, two of whom would sail/leg on an A, B, C rotation; see Appendix 4). Fox asked whether that change involved additional training, or just juggling personnel. Francis replied that the A, B, C rotation would allow for more training. Technical support staff employment conditions had also been changed. Technical support staff could now choose to return to a home of their choice following cruises and not necessarily to College Station. They would then receive 12 months salary at a flat rate. Alternatively, they could choose to return to College Station and receive sea pay plus compensation time. This system would allow employment of technicians from international partner countries. Taylor commended ODP-TAMU for that change, adding that it was important for the morale of technical support staff. Francis reported that Computer Services and Data Bases were being combined under a single manager as the Department of Information Services (old and new organizational charts are included in Appendix 4). ODP-TAMU was in the process of recruiting the new Manager of Information Services (see advertisement in Appendix 4) and expected to fill the post in a couple of months.

In response to a question from Kidd, Francis estimated that ~15-20 technicians would choose to live away from College Station. Photographers, however, would be required to live in College Station. Replying to a question from Pyle, Francis said that Baldauf would be full time on ODP. In reply to Fox, Francis stated that two staff scientist positions were currently vacant.

Staffing of legs 144 and 145 was complete. Leg 146 was 85% staffed and staffing of Leg 147 would begin at the end of April. Staffing of legs 148-152 had not yet begun.

The proposed publication schedule is shown in Appendix 4. Initial Reports volume 134 and Scientific Results volume 122 were being printed by a different printer. ODP-TAMU planned to evaluate a number of different printers over the next year and finally choose two.

Langseth asked for some quantitative information on the performance of MDCB. Francis replied that MDCB had cored claystone and siltstone on Leg 141, recovering 2.5 m and 1.5 m cores. Its recovery rate had been better than the XCB.

WIRELINE LOGGING (ODP-LDGO)

Lyle noted that there had been a big increase in the number of logging strings run starting in 1989, coinciding with the introduction of FMS (Appendix 5). The number was now stabilizing at 70-80 strings/year. The number of data requests had increased dramatically in 1992 (Appendix 5).

Drilling had not recovered gas hydrates on Leg 141 (CTJ). Logging results suggested that the BSR was caused by free gas beneath hydrate (Appendix 5). The presence of hydrate was inferred partly from the presence of low salinity pore water and partly from high sonic velocities.

There had been no logging on Leg 142 (Engineering EPR). Leg 143 logging was especially important because of low recovery rates. Cyclicity had been observed (Appendix 5). The Japanese magnetometer had worked well operationally, but Lyle had not yet seen its results. Leg 144 logging would be similar to that on Leg 143, involving the standard logging suite (geophysical string, geochemical string, FMS), digital BHTV, Japanese magnetometer and, if Hole 801C was logged, packer (for permeability).

Leg 145 (NPT) logging would involve the standard logging suite together with the French magnetometer/susceptibility tool.

Leg 146 (CA) would have an extensive downhole program. All sites were to be logged with the standard suite (geophysical string, geochemical string, FMS), though Lyle felt that the geochemical string was the least important. R. Jarrard would be the logging scientist, and Lyle stated that he would defer to Jarrard on the issue of whether to run the geochemical string. Temperature measurement would involve both WSTP and logging temperature. For two re-entry sites, the Schlumberger VSP tool and the packer/flowmeter would be run. Also planned for one or more sites were the WHOI offset VSP, CORK/thermistor string emplacement, LAST II and GEOPROPS. It was possible that the digital BHTV and shear-source sonic tools would also be deployed. Fox said that SMP had been very concerned to learn that the pore-pressure portion of WSTP had been removed from *JOIDES Resolution* for calibration purposes and felt that it had to be back in time for Leg 146. Langseth said that there was a serious question as to whether WSTP pressure measurements were of value. That was one reason why WSTP had not been used for that purpose. Pressure measurements were, however, obtained from packer and long-term CORK experiments.

Lyle turned to FY93 logging. Possible new tool developments were a digital version of the high-temperature resistivity tool and a high-resolution magnetic susceptibility tool. The final decision on Leg 148 would influence testing of slimhole/high-temperature tools.

Wireline Logging Service was in a state of transition. ODP-LDGO did not intend to bid on standard shipboard data acquisition in FY94, i.e., supervision of Schlumberger data acquisition, staffing of shipboard logging personnel and downhole measurement laboratory maintenance. FY93 would be a transition period to the next shipboard logging operator.

Lyle concluded with a review of personnel changes. J. Schwartz (logging engineer) left in December 1991. Lyle (interim chief scientist) planned to leave in July 1992. A. Meltser

(logging and tool development engineer) had joined ODP-LDGO from Ukraine. He has extensive experience, including logging of the Kola Deep Hole. F. Filice (assistant systems manager) had joined from ARCO. He also has extensive field experience and experience with log processing. B. Pratson (log analyst) was on family leave.

Discussion

Austin asked who Lyle's replacement would be. Lyle replied that that had not been determined. Lancelot commented that the French high-resolution susceptibility tool had a resolution of 1.5 mm in the laboratory and should be ready in late 1993. Berger asked how the amount of time on legs allotted to logging had changed. Lyle replied that the switch in 1988-89 from two to three strings added another ~$^1/_3$ to the time required for logging. At the same time, there were fewer failures, which saved time. On average, one day was spent logging for each 500 m of hole, resulting in a total of 6-8 days/leg, depending on the number of non-standard measurements.

945. JOIDES Reports by PCOM Liaisons to Panels

DMP

Lewis stated that the DMP minutes (Agenda Book, white pages 113-140) were comprehensive. He highlighted three items. 1) Third-party tools: the objective was to produce a document describing rules and regulations. 2) DMP hoped to put out a public information brochure in May. 3) Processing, acquisition and distribution of log data. The full third-party tool document had not been included in the minutes. Austin stated that guidelines for the monitoring of third-party tools had been published in the *JOIDES Journal* (February,1991 issue). The parts that DMP wished to revise concerned how to ensure that the third party completed the task and how tools passed from the third party to ODP. Lewis said that DMP had produced a draft report and was recommending it to PCOM.

DMP felt that the PCOM decision to relegate logging objectives of Leg 142 (Engineering/EPR) to alternate status had been made too late. The logging scientist had not been made aware of the decision. Austin replied that PCOM had not given logging alternate status, but had stated that coring should be paramount. Lyle stated that he should have contacted Batiza (Leg 142 co-chief) about the matter.

Lewis reported that DMP felt that, in view of the growth in demand for logging data, sufficient personnel should be available to disseminate logging data. The possibility of computer access to a central archive of log data should be explored to facilitate acquisition of data by the community. Austin noted that PCOM would consider the ODP-LDGO white paper "ODP DataNet Services", already reviewed by selected panels, later in the meeting.

Beiersdorf presented information on the German high-temperature, dewared, three-component magnetometer (Appendix 6). It had been tested in the KTB borehole and run from 3 to 6 km, with corresponding temperatures of 90°-170°C. The magnetometer had been exposed to temperatures of between 130°C and 170°C for 5 hours and had worked well. The sensor package was at 80°C, while the external temperature was 170°C. It had previously been tested to an external temperature of 260°C; the corresponding internal sensor temperature was 125°C. By the end of 1992, a gyro for orientation and an inclinometer would be available on the tool.

Outer diameter of the tool was 88 mm. Beiersdorf felt that Leg 148, if that was Hole 504B, would be an ideal place to run the magnetometer.

STEERING GROUP FOR *IN-SITU* PORE FLUID SAMPLING

Austin explained that the steering group had met to consider what would have to be done in order to get a RFP ready. P. Worthington had been unable to chair the meeting and J. Gieskes had filled in. (The report of the steering group was available as a handout.)

Becker, PCOM liaison, stated that the steering group had decided to write a narrowly-focused RFP for a feasibility study. Becker stressed that pore fluid sampling was distinct from borehole fluid sampling. The group had emphasized sampling of pore fluids from: 1) basement aquifers, and 2) low porosity (<30%) sediments. This was in contrast to pore fluid sampling from soft sediments, which could be done using WSTP or PCS. The immediate goal was to write a scientific justification and RFP for a feasibility study that was to be completed by Winter 1992-1993. Source of funds for the feasibility study, however, remained uncertain.

A scientific/operational issue was the level of formation pressure relative to hydrostatic pressure. The formation might be under-pressured, over-pressured or hydrostatic. Downhole flow had been observed most frequently, suggesting that under-pressured formations were the most common. This led to the following problems: 1) a formation permeable enough to sample would be invaded by drilling fluid; 2) a formation impermeable enough not to be invaded would not produce formation fluids; 3) a permeable formation that produces (which may be rare) could be sampled by a borehole sampler. As possible solutions to these problems, the main goal of the feasibility study might include revisiting sealed holes, packer technology, or other approaches.

The proposed schedule was: 21 April 1992, endorsement by PCOM; 21 May 1992, RFP submitted to JOI/NSF; 15 June 1992, RFP issued by JOI/NSF; 15 August 1992, responses to RFP due; 15 September 1992, evaluation of responses (DMP meeting); 30 September 1992, selection of bidder; 15 October 1992, contract issued; January 1993 DMP, oral report by contractor; 1 March 1993, written report due. The matter was urgent because after the written report there would have to be another round of proposals to build the device. A functioning tool might be delayed for two to three years beyond the written report. The following monitoring responsibilities were assigned: science issues, P. Swart and J. Gieskes; technical issues, D. Huey (ODP-TAMU).

Discussion

In response to a question from Langseth, Becker stated that the feasibility study would produce a report which assessed the many possible options for recovering pore fluids. Langseth felt that it appeared that it might be more a matter of strategy, i.e., how to make fluids accessible for sampling. That might include how to drill and circulate and when to attempt sampling. In reply to a question from Berger, Becker said that the cost of the feasibility study was envisaged as being ~$100,000. Austin explained that OPCOM had allocated money to downhole fluid sampling, but that NSF viewed that justification inadequate for allocation of funds. Part of the steering group's work was to provide a scientific justification for NSF.

Taylor asked whether pore fluid sampling was feasible. Becker acknowledged that one outcome of the feasibility study might be that it was impossible. Austin noted that it was in part

a question of how long *JOIDES Resolution* would be allowed to sit at a hole in order to recover uncontaminated fluid. In response to a question from Beiersdorf, Becker said that members of the steering group would be at the June 1992 DMP meeting in Germany. Austin added that the group would meet again in conjunction with DMP. Taylor said that he was reluctant to spend $100,000 to be told pore fluid sampling was impossible. He suggested that the feasibility study be done informally. Becker commented that revisiting sealed holes was one possibility. Francis said that that was done in connection with Leg 136. Langseth pointed out that that was expensive and asked whether pore fluid sampling could be done in real time. Taylor asked whether it would also produce better results than squeezing. Becker noted that squeezing would not work in all sections.

Austin stated that fluid sampling was the number one panel priority for non-engineering equipment. PCOM would return to the issue later in the meeting. PCOM must also endorse the timing of actions proposed by the steering group. Austin had asked the group to write a science discussion to obtain (OPCOM) funds from NSF.

PPSP

Austin reported that PPSP had approved all Leg 145 (NPT) sites. Several Leg 146 (CA) sites had been disapproved because of proximity to structures and through-going faults. There were now three sites in each of the Vancouver Island and Oregon margin drilling areas.

PPSP also previewed Leg 150. A presentation was given by one of the designated co-chiefs. Leg 150 (NJ/MAT) had potential safety problems due to gas in the upper 100 - 200 m. Such occurrences of gas were known to occur on the New Jersey margin. PCOM might have to delay or modify Leg 150. This raised the issue of how to deal with site-related surveying. There was at present no easy way to get a high-resolution site survey for a leg that was on the schedule. There used to be facilities for doing that.

New pollution prevention and safety guidelines had been completed and would be published as a special issue of the *JOIDES Journal* later in 1992.

SMP

Fox stated that SMP met in Honolulu during a port call by *JOIDES Resolution*. SMP members examined shipboard laboratories and equipment and held discussions with technicians.

SMP had listed seven laboratory requirements (Agenda Book, white page 343). Fox highlighted three of them: 1) need for technical staff to receive shorebased training and stay in a specific laboratory for at least eight legs; 2) programming software (preferably C) should be provided for Macintosh computers; 3) cryogenic software should be completed for use on Leg 145 (NPT).

SMP recommended that safety of AC fields aboard *JOIDES Resolution* be assessed as soon as possible. High intensity AC fields could be harmful. A meter should be made available for such assessment.

SMP recommended adoption of procedures for XRD sediment analysis. A new manual was in hand. SMP disagreed with removal of the pore pressure component of WSTP. SMP felt that

Leg 146 (CA) might be jeopardized without it, though Fox acknowledged that, based on what he had heard earlier at PCOM, that might not be the case.

In the area core-log integration, SMP stressed the importance of a real-time drilling parameters data acquisition system. It should become an engineering development goal. SMP also recommended acquisition of Corepac software as the shipboard core-log data correlation tool. The manual must, however, be updated to make it more user-friendly. In addition, training with Corepac should be provided for the sailing core-log data specialist.

SMP endorsed the recommendations of DH-WG (see below). SMP felt that the shipboard computing facility was a central capability. DH-WG recommendations should, therefore, be implemented under the direction of the Science Operator with input from a specialist JOIDES steering group.

SMP endorsed the overall direction of the ODP-LDGO proposal for DataNet Service because real-time shipboard data processing capacity had reached its limits in some laboratories. An increasing need for shore-based support was envisaged. The present proposal, however, did not define a functional relational database and needed further development.

Fox highlighted the first two items of SMP's equipment priority list: 1) core-log integration needs (natural gamma and MST upgrade, computer workstation and resistivity equipment for discreet core measurements), and 2) a color measurement instrument, e.g., a Minolta instrument at a cost of only a few thousand dollars.

SMP felt that the shipboard measurement process was working well.

Discussion

Arculus drew PCOM's attention to a remark in the SGPP minutes (on Agenda Book, white page 191) to the effect that the shipboard XRD was worthless. He noted that the SMP minutes used XRD when they meant XRF. Fox replied that the XRF was excellent. He could not comment on the status of XRD, except to say that a procedure had been drawn up for use of the XRD with sediments. Arculus stated that the procedure only allowed a bulk major and trace element analysis of sediments and did not provide, for instance, information on clay mineralogy. Fox did not think that SMP had discussed that issue. Taylor added that effectiveness of the XRD depended on the technicians who happened to be on a particular leg. Lancelot agreed. Austin commented that the message about technician training was being heard. Francis stated that it was important to cross-train technicians because technician availability was sometimes a problem. Arculus returned to SGPP's point. Austin stressed that it had only been the point of view of one SGPP member, rather than the entire panel's perspective. Kidd agreed that XRD data were of variable quality from leg to leg and depended on the technicians aboard and also the interest of members of the Scientific Party. Austin stressed that XRD procedures should be spelled out clearly and given to technicians. Taylor pointed out that interpretation was involved. Lancelot felt that technicians should be trained to do it. Austin said that Francis could take that recommendation to ODP-TAMU.

Austin asked whether there were any gaps in the disciplinary balance of SMP. Fox replied that it was difficult for him to assess that, having attended only one meeting. Austin noted that SMP was smaller than most panels and could be augmented. Lancelot recalled that J. Natland had

characterized SMP as sediment-oriented. Austin stated that PCOM could decide to augment SMP.

Becker asked whether the issue of making physical properties measurements under *in situ* conditions had arisen at SMP. This needed to be considered deeper in sections for ties to seismic data. Laboratory measurements became less useful with depth. Fox did not know whether it had been discussed. Francis explained that it used to be done on shore. Fox added that it was labor-intensive and that few measurements could be made. It might be impossible to get measurements in real time in order to assist with adjustments to drilling strategy.

IHP

Berger explained that he had attended the IHP meeting for only one day. He referred PCOM to the IHP minutes (Agenda Book, white pages 283-324), where specific recommendations were listed. Berger said that he would present his personal impression of what IHP had considered important, noting that IHP Chair Gibson would be present later in the meeting.

Berger's impression had been one of general panic at the flood of data. IHP felt somewhat abandoned by the system. Data volume had increased, but the attention paid to it had not. IHP was very concerned about the shipboard computing system, both hardware and software. Estimated cost of improvements was of the order of several hundred thousand dollars. Good progress was being made on data handling; a demonstration was given of the CD-ROM ODP dataset, which contains data up to Leg 139.

Discussion

Austin asked whether Berger felt misplaced as liaison to IHP. Berger answered that he felt that he could only "sit and listen." Lancelot said that there was a learning curve for a liaison and that IHP had integrated itself into ODP a great deal.

SSP

Watkins explained that SSP had reviewed Atlantic data and made initial assessments of 94 potential drill sites. Data were often available, but often had not been interpreted by proponents. (Watkins' summary of SSP's assessment of scheduled and potential drilling drilling programs is presented in Appendix 7.)

SSP would meet again at LDGO in early August to prepare recommendations for the August PCOM meeting. SSP recommended a four-year term for Kastens, who they had proposed as the next Chair. ODP-TAMU should investigate government approval necessary for drilling NJ/MAT (Leg 150). SSP planned to develop guidelines for offset drilling and invited OD-WG input. SSP expressed concern about the possibility of transferring the Site Survey Data Bank from LDGO. The present operation was excellent; a transfer would disrupt operations and possibly result in reduced efficiency. Furthermore, the Data Bank relied on LDGO's database. SSP proposed an August 1 deadline for getting data on drill sites to the Site Survey Data Bank, except for known cases involving data being collected.

Discussion

Kidd felt that PCOM should be aware that as many as 25 proposals could have data in the Data Bank by August 1. SSP, therefore, wanted to provide input to the August PCOM meeting to assist with selection of proposals for the FY94 prospectus. Austin stated that SSP would recommend to the JOIDES Office a subset comprising those proposals that were most ready for drilling. The JOIDES Office would then send the list, with an assessment of drillability, to PCOM in advance of the August PCOM Agenda Book and try to get a preliminary assessment of what subset should go into the FY94 prospectus. The JOIDES Office was trying to get an early start on this in order to give thematic panels more time to consider programs for ranking in the fall, i.e., late September through mid-October 1992. Austin applauded SSP's actions and their decision to meet at LDGO.

Duncan asked what SSP had meant by requesting that more effort be put into compiling data for Santa Barbara Basin (SBB) drilling. Watkins replied that it was related to potential safety problems. Kidd added that there were two concerns: gas and location in shipping lanes. Austin stated that OHP wanted a portion of Leg 147 to spend 1.5 days drilling in SBB. He reminded PCOM that the SBB site had initiated the entire 1991 "supplemental science" issue, but that a proposal had not materialized in time for consideration during those discussions.

TEDCOM

Austin noted that TEDCOM had not met since the last PCOM meeting. TEDCOM's next meeting would address DCS planning and perform a preliminary review of a deep drilling RFP. The latter was another OPCOM recommendation and a feasibility effort. OPCOM had allocated $100,000 for a deep drilling study, but no commitment had yet been made to issue a RFP. Austin commented that, after nominating consultant H. Zaremba to examine the issue of additional platforms, TEDCOM had given his proposal a negative review.

OHP

Duncan began his report by commending M. Delaney, the new Chair of OHP.

Poor attendance had resulted in inadequate representation and limited expertise. International partners should ensure that alternates are notified and can attend.

OHP strongly recommended pursuing DCS development with adequate shorebased resources and testing and ship time to ensure a fully-operable system as rapidly as possible. OHP saw the need for DCS for drilling sediments (e.g., chert/chalk sequences).

OHP recommended APC/XCB developments for upcoming legs 145, 150 and 151. Work was needed on: a) real-time hole-to-hole and core-to-log correlations, b) minimizing stretching and distortion with APC, and c) improving recovery with XCB.

OHP recommended that a single site in SBB (multiple APC to ~100 m; ultra-high resolution upwelling in the Quaternary) be added to Leg 147. OHP was aware of potential safety problems and had assigned watchdogs. Issues of available site surveys and refinement of site selection would be pursued by watchdogs with proponents. Austin noted that PCOM would return to this issue under Old Business. He added that J. Kennett (SBB proponent) had offered

to fund a launch to take personnel out to *JOIDES Resolution* to work on SBB cores and then leave again. PCOM had expressed support for <1 leg science in 1991, but had stipulated that it be incorporated into legs at an "early stage". PCOM would now have to decide what constituted "early". In response to a question from Cita-Sironi, Duncan said that OHP understood what PCOM had decided about supplemental science. OHP felt, however, that SBB drilling would yield exciting science and that the probability that Leg 148 would no longer be an engineering leg opened up sufficient flexibility in the schedule to insert SBB. Austin, however, pointed out that SBB drilling would have to be either at the end of Leg 146 or at the beginning of Leg 147.

Duncan continued his report, noting that OHP recommended that PCOM form a DPG for NAAG II in 1993, for drilling in 1994. NAAG II-DPG would extend NAAG II and integrate new proposals. OHP also recommended formation of a DPG to integrate highly-ranked Caribbean proposals into common-interest sites and develop a drilling strategy (Neogene, Paleogene and Cretaceous issues, plus tectonic histories).

OHP recommended that an icebreaker operate in tandem with *JOIDES Resolution* for the highest-latitude sites of NAAG I (Leg 151), YERM-1 and ARC-2A. OHP considered those sites the chief objectives of NAAG I, but drilling them would involve penetrating into partially ice-covered waters.

OHP had provided a description of a deep-drilling target in the Somali Basin for TEDCOM. OHP would meet next in Marseille on 30 September - 2 October.

Discussion

Kidd asked what OHP felt had been achieved relative to their plan to begin with study of the Neogene and work back to the Paleogene. Duncan answered that Ceara Rise would constitute the final element of Neogene work. In addition, the composition of OHP was changing with the inclusion of members interested in older sections.

SGPP

Cita-Sironi noted that the SGPP meeting had overlapped with that of OHP. Liaisons between the panels had, therefore, been absent for part of SGPP's meeting. Cita-Sironi characterized SGPP as an active panel with strong geochemical and sedimentary expertise, the former being dominant. Members from Japan, Russia and UK were absent.

Leg 141 (CTJ) geochemistry was discussed. PCS had been used 12 times, failing on 6 of those attempts. PCS was complex and required improvement. SGPP recommended that two working PCS units be available for Leg 146 (CA). In addition, T. Pettigrew (ODP-TAMU and PCS expert) should be invited to participate in Leg 146.

In spite of the presence of a strong BSR, no gas hydrate was recovered on Leg 141. A possible future strategy would be to rapidly drill and log (sonic and resistivity) a pilot hole to plan a gas hydrate drilling strategy in real time, then rotary drill a second hole as fast as possible for specific hydrate targets. Austin pointed out that only 25% of pore space need be filled with gas hydrate to create a BSR. It would, therefore, be possible simply to miss the hydrate during drilling.

Cita-Sironi reported that SGPP's new proposal reviews involved careful work. Each went to >1 watchdog. Watchdog names, however, were not given to proponents. Cita-Sironi felt that should be done.

Part of SGPP's meeting had been devoted to a scientific discussion. Three themes were discussed: 1) Gas hydrates (strategy and possible drilling areas, as well as how to combine gas hydrate objectives with existing proposals); 2) Sapropels (discussion led by Cita-Sironi); 3) Sediment drifts (Faro Drift and drifts off Brazil). SGPP was considering creating new proposals to address these themes, or supporting existing proposals.

Cita-Sironi commented that both OHP and SGPP had recently changed their Chairs, but still seemed unable to communicate effectively. Austin said that he had advised OHP and SGPP to meet jointly. A joint meeting should take place by spring, 1993. Cita-Sironi explained that J. McKenzie, SGPP Chair, had decided to meet in Kiel in September 1992, where a paleoceanography meeting was to be held, in the hope of meeting jointly with OHP. OHP was, however, meeting elsewhere. OHP's liaison to SGPP had only been present on the last day of the SGPP meeting.

SGPP was not supportive of DCS, since it was not a priority of SGPP. SGPP proposed that one co-chief for NARM volcanic I (Leg 152) should be a geophysicist and one a petrologist/geochemist. Proponents left the room during discussion of proposals. Austin remarked that SGPP were the only thematic panel to make proponents leave during discussion. PANCHM had decided in December 1991 that such decisions were up to the Chair.

Discussion

Kidd asked whether there was anyone on SGPP who would look at current proposals to drill drifts. Austin responded that there had been no nominations for replacement members. PCOM could examine SGPP's membership and make additions. Austin asked about SGPP's attitude to DCS. Cita-Sironi replied that SGPP thought it a waste of money and ship time. Blum added that he thought that SGPP had no enthusiasm for DCS, rather than being against it. SGPP simply felt that there were other things to do.

LITHP

Malpas reported that LITHP strongly supported continued DCS development because: a) DCS might perform better in other than ridge-crest lithologies, and b) little money had been spent on DCS in comparison with what industry would spend on such a project. If Leg 148 was not to be an engineering leg, LITHP recommended that it be a return to Hole 504B, which was LITHP's highest-ranked program globally. LITHP opposed inclusion of SBB drilling in either Leg 148 or Leg 147. If Leg 148 was to be an engineering leg, LITHP recommended that DCS be tested in a less-hostile environment that zero-age crust., e.g., Vema Fracture Zone transverse ridge site or Galapagos extinct hydrothermal mound.

LITHP reiterated the importance of deep drilling. LITHP also endorsed DMP's efforts to use *JOIDES Resolution* in an experimental mode and was prepared to issue a joint RFP, with DMP, on the subject of lithosphere characterization. The objective would be to examine scales

of variation in oceanic crust. LITHP also expressed interest in receiving proposals to drill in large igneous provinces (LIPs) and the Red Sea.

LITHP reemphasized that PCS was a high priority. LITHP's non-engineering priorities were: 1) sidewall coring tool, 2) computer hardware and software for core-log integration, 3) *in situ* fluid sampling and measurement of pore-water pressure and permeability, and 4) CatScan or X-radiography of whole cores.

LITHP planned to rewrite its White Paper to reflect changes in emphasis. LITHP also planned to issue a RFP for drilling proposals addressing its high-priority thematic objectives in any ocean, including the Red Sea.

Discussion

Francis, noting that PCS could only be run through XCB, expressed surprise at LITHP's interest. Austin believed that it indicated a growing effort to develop inter-panel solidarity. Thematic panels felt that they would get further if they spoke together. He added that LITHP was moving away from ridge crest drilling to offset drilling. In response to a question from Lancelot, Austin said that there was a Galapagos extinct hydrothermal mound proposal, but that the sites were in deep water. The Vema option would be better in that respect for a DCS test. Tucholke asked whether lithosphere characterization could be integrated with the offset drilling concept. Malpas replied that that had not been discussed directly and that lithosphere characterization was a generic concept. No proposals existed. It was talked of in terms of geochemical reference holes. Becker asked the meaning of a joint RFP for lithosphere characterization and asked why somebody did not just write a proposal. Malpas responded that LITHP wanted to write a proposal in concert with DMP's philosophy, which was to understand what a single hole can reveal about subsurface geology, what kind of area was covered, etc. He agreed that one way would be to write a proposal. Lewis doubted that a RFP would be required. He felt that there were enough proponents out there. Austin stated that he felt that the term RFP, in this case, was used in the context of SGPP's recent advertisement in the *JOIDES Journal* for gas hydrate proposals. Taylor added that it was more a call for proposals than a RFP in the formal sense.

Beiersdorf asked whether any estimate existed of what was still needed to develop DCS, versus what industry might spend to reach that goal. Austin replied that TEDCOM had discussed that issue. The estimate was $20M, including ship time (four engineering legs). $3M to $4M of that would be spent ashore. Industry might spend 2 - 10 times that amount.

Lancelot suggested that, if Red Sea drilling was possible politically, it might be time for a workshop on the subject. Austin stressed that such a workshop would have to be devoted to young ocean basins, not just the Red Sea. Blum pointed out that TECP had ranked a generic Red Sea program in 1991 and 1992. Furthermore, there had already been a Red Sea WG. Austin added that the Red Sea WG had been in ~1985 and that a drilling strategy existed. Lancelot said that there were many Red Sea proposals which could be reactivated, adding that the French might run some surveys in the Red Sea in 1993. Francis stated that ODP needed to make contacts with scientists in Saudi Arabia. Austin recalled that the original stumbling block had been that bordering countries had wanted to keep the core. Francis added that communications with Saudi Arabia had also been difficult.

TECP

Tucholke explained that TECP had conducted an interim review of offset drilling. TECP was concerned that the concept of offset drilling was too geared toward recovering sections of oceanic crust without regard to tectonic setting. Two kinds of tectonic setting existed: 1) where tectonics was an incidental feature that had exposed crust (e.g., HD), and 2) where tectonic setting had been ultimately responsible for creating crust (e.g., detachments on slow-spreading oceanic crust). OD-WG did not seem to be developing tectonic hypotheses to be tested. There had been some miscommunication because TECP's liaison to OD-WG had been unable to attend the entire meeting.

TECP re-emphasized strong support for deep drilling and felt that the best way to explore its feasibility was to try it.

TECP had discussed how to include structural information in visual core descriptions. This had been done on Leg 141 and should be set up as a standard procedure. It should be included in the computer database and structural barrel sheets produced. Structural information should not be missed.

TECP also expressed interest in Red Sea drilling.

Discussion

Malpas said that he had brought up the issue of offset drilling strategy and tectonics at LITHP. LITHP had been split: 50% agreed with TECP, but the remainder did not care whether one part of a composite crustal section was from the Atlantic and another from the Pacific. Austin felt that the lack of a TECP liaison might have been part of the problem. In response to a question from Cita-Sironi, Tucholke said that balanced cross-sections were a goal and that TECP recognized that they will not be clearly defined in most cases. Providing three or four options, however, would place some constraints on the system.

OD-WG

Taylor referred PCOM to the report on OD-WG in the Agenda Book (blue pages 12-14; OD-WG minutes were also included, on white pages 141-151). Offset drilling was a strategy to understand the processes of oceanic lithosphere formation by drilling key partial sections of crustal and upper mantle rocks exposed in tectonic windows (e.g., propagating rifts, fracture zones and median valley master faults). Offset drilling sections were ready to drill immediately with existing technology and where temperature is not a problem. The existing global database comprised Hole 504B (long section of Layer 2), Hole 735B (gabbro) and Site 395 (ultramafics). The plan is to circumvent the need to drill Layer 2 to get at Layer 3 and mantle rocks.

As previously noted, TECP's liaison had not been present for the entire meeting. OD-WG progressed further with discussion of tectonic processes than the TECP liaison saw, so that TECP's negative feelings were not justified.

OD-WG strategy would involve drilling of composite sections originating from fast- and slow-spreading ridges and from areas influenced by hotspots, as well as areas outside hotspot

influence. A matrix of OD-WG site-survey requirements was included in the Agenda Book (blue page 13).

Discussion

Kidd agreed with the site-survey requirements for the time being, but noted that the September MCS cruise by *R/V Sonne* was an experiment. Requirements might change depending on its results. Austin added that K. Kastens presence as SSP liaison to OD-WG had been essential and generated a good dialog. Taylor pointed out that transitions (dike/gabbro and gabbro/ultramafics) were not well-characterized in 3-D and that, therefore, advancing Hole 504B into gabbro was a high priority. The emphasis was on long sections of gabbro and ultramafics, where 3-D geometry and depth of transitions could be determined, because of the need to provide additional characterization of transition zones.

Austin stated that OD-WG felt that recovery of a complete crustal and upper-mantle section by offset drilling should be carried out at a single drilling area if possible. Such a location had not, however, been defined. Therefore, OD-WG had backed off and considered what was feasible at present. Fox, however, felt that the OD-WG minutes indicated a consensus that did not yet exist. He felt it important to understand a single area as much as possible. Taylor explained that some of LITHP's concerns were related to not knowing how a leg devoted to drilling peridotite would turn out. ODP had little experience drilling peridotite. Malpas felt that the term offset drilling implied that the composite section would be from a single area and suggested changing the name to cover the option of constructing composite sections from widely-spaced sites. Kidd noted that Kastens had used the term tectonic windows, rather than offset drilling. Good seismics, however, would still be required regardless of the approach.

Tucholke felt that TECP's concerns had still not been addressed. One model of slow-spreading crust predicted that there might be no transition, but only faults. It was necessary to understand detachments well away from the rift valley. Fox cautioned that the geophysical tools to do that might not exist. MCS did not show the disturbance effects seen with *in situ* sampling. Taylor explained that OD-WG was frustrated that SSP felt that there was insufficient survey data even for the well-surveyed MARK area. Even there, 3-D characterization had not been achieved. Tucholke said that all of the MARK surveys had been along-axis and that little off-axis work had been done. In spite of all the survey work, it had not been carried out in such a way as to allow hypothesis testing. Sharaskin noted that there were many examples of pillow lavas overlying gabbros and even peridotites. Kidd said that SSP would like to encourage those interested in tectonic windows to get together and compile data.

Austin stated that PCOM could mandate OD-WG as a DPG or synthesis group. He was, however, reluctant to do that until it determined an offset drilling strategy after the third meeting. It would be problematic, however, if that strategy was not satisfactory to the panels. OD-WG needed advice because LITHP and TECP were reacting. Fox said that some of the issues would have to be resolved at the next OD-WG meeting. Out of that meeting would come a sense of whether to constitute a group to synthesize data. Lewis suggested renaming OD-WG. Austin agreed that OD-WG might have defined their goal differently from what PCOM had originally envisaged. Malpas did not care what the WG was called. The important points were that LITHP was split and that TECP had concerns. Austin pointed out that LITHP was moving away from ridge crest drilling to offset drilling and, therefore, would rank offset drilling proposals highly. TECP, however, would rank them poorly if it disagreed with OD-WG's overall approach. Malpas stated that LITHP was moving away from drilling continuous sections. If PCOM did not address what OD-WG was doing, however, ODP would be back in

the position of having to drill a continuous hole to provide a framework on which to hang bits and pieces of crustal recovery from elsewhere. Tectonic processes had to be understood so that it would be clear where drilled sections lay in relation to crustal sections. Berger recalled that Sharaskin had highlighted variability from place to place. Berger, therefore, suggested using P/T diagrams to place sections in a crustal setting, rather than a stratigraphic approach. Batiza reemphasized the frustration of LITHP over the paucity of rocks on which to work. Much could be learned from the relative positions of rocks, even if they had not been placed within a total crustal section. The attitude that there would be no drilling unless everything possible could be learned had paralyzed LITHP. Arculus, returning to Berger's point, felt that a P/T approach was insufficient and that ties to seismics were essential.

Taylor noted that OD-WG had defined their approach (Agenda Book, blue pages 12-14) as the drilling of partial sections. In an ideal world, partial sections would be spatially located and characterized, but that might not be achievable within the next year. He asked whether this was the right approach. If not, PCOM must make it clear to OD-WG. Taylor added that part of the impetus for offset drilling had come from EXCOM. Malpas stressed that a composite section could not be constructed if component sections could not be hung together. It was, therefore, essential to drill transition zones. Taylor responded that OD-WG would also prefer that. Austin added that OD-WG could not presently define a location where a transition was well-constrained enough to be sure of drilling it. Lewis suggested changing the wording of OD-WG's definition to involve drilling of key petrologies (rather than partial sections) exposed in tectonic windows.

Austin suggested that someone needed to summarize PCOM's feelings to redirect OD-WG in the light of LITHP's and TECP's comments. OD-WG must define a strategy. PCOM might state that no offset drilling would occur unless a place where crustal stratigraphy was offset in one location could be identified. Taylor responded that HD was such a place, but that it had not yet been characterized in 3-D.

Austin stated that the OD-WG Chair would receive the PCOM minutes and that TECP and LITHP would have liaisons at OD-WG. Malpas said that he would be happier if the purpose was simply to sample lithologies (to study magmatic processes, etc.), but that the strategy broke down when the composite section idea was introduced. He suggested that that idea be dropped if sections comprising the composite were to be an ocean apart. That would not stand in place of a complete crustal section in one place. Fox doubted that TECP would support dropping the composite section approach. Providing some sense of PCOM's philosophy to OD-WG would be useful. Malpas felt that drilling lithologies addressed magmatic and tectonic processes, but that it did not substitute for a single hole. Austin said that LITHP and TECP liaisons would be at OD-WG and could hash it out. He asked again what PCOM should say on the subject.

Cita-Sironi announced that she had a copy of a revised Vema proposal, which had a LITHP approach and strong sensitivity to TECP's problems. Austin responded that OD-WG thought the data at Vema were insufficient. Taylor added that there was no 3-D control. Tucholke doubted whether TECP would be supportive because it was uncertain how the Vema ridge had formed; there was no hypothesis to test. Furthermore, MARK was simpler.

Malpas felt that OD-WG's approach was reasonable. OD-WG should address LITHP/TECP input. He suggested that OD-WG drop the composite section approach. Austin stated that Taylor should take that message back to OD-WG. PCOM accepted LITHP's and TECP's

advice. OD-WG should also consider what to do next, e.g., continue as a DPG, or as something else, or turn work over to proponents.

SL-WG

Watkins stated that SL-WG had not met since the last PCOM meeting. The next SL-WG meeting would be on 6-8 June 1992 at Snowbird, Utah, to finalize its report.

946. Scientific Results of Recent Drilling

LEG 141: CHILE TRIPLE JUNCTION

S. Lewis explained that Leg 141 studied spreading ridge subduction. Objectives were to address subduction accretion and erosion as well as thermal aspects. Pre-collision, post-collision and collision sites had been proposed originally. Leg 141 focussed on the collision zone, drilling 5 sites: 859, 860 and 861 forming an E-W transect across the forearc, Site 862 on Taitao Ridge, and Site 863 above the subducted ridge landward of the trench slope (Appendix 8).

The transect had been successful. Site 859 provided good information on thermal structure at the toe of slope. Plio-Pleistocene rocks are heavily tectonized, but younger sediments are not deformed. Sediment in the trench is, therefore, being neither accreted nor heavily eroded, indicating a mass balance. Temperature profiles indicate cooler temperatures further from the subducting young oceanic crust.

Only 20 m of sediment was penetrated on Taitao Ridge. Basement rocks contain either ~50% silica or 75-80% silica, with no intermediate compositions. Taitao Ridge is not, therefore, an offshore extension of the Taitao Ophiolite. It may have been formed by volcanism associated with stresses along the Taitao Fracture Zone.

BSRs and gas hydrates had not been primary objectives of Leg 141, but were addressed. PCS was deployed twelve times and WSTP measurements made. No clathrate was recovered, but proxy indicators suggested its presence. Two models of gas hydrate occurrence existed: 1) gas hydrate as a sheet-like seal (Von Huene model), and 2) spotty, permeable occurrence (Hyndman model). The second type appeared more likely at CTJ ("snow rather than ice"). Lewis estimated that ~25% of pore space was filled with hydrate, permitting gas migration through the hydrate layer.

Much organic matter, almost liquid, was found coming from high-temperature zones. This had raised some concerns during drilling. Organics being drilled were not, however, mature. Gas came from deep in the forearc and, in the absence of seals, was not a problem. Francis noted that communications between ship and shore had been good throughout and that PPSP had been satisfied.

S. Lewis went on to report that Site 859 recovered "gumbo", mud which gummed up drill bits and clogged roller cones. In reply to a question from Fox, S. Lewis said that the average recovery rate for the whole leg was 45%. Chlorine levels dipped near the BSR (Appendix 8), probably because melted hydrate had released fresh water into the hole. Temperature profiles

show a positive anomaly, which appeared to be real, near the bottom of Hole 859 (Appendix 8). A zone of hot fluid at that level was hypothesized.

No age gradient was noted between broken formations at the bottoms of holes at sites 860 and 859. Methane content was high at shallow depths at Site 860 (Appendix 8). Inorganic chemistry was the same as at Site 859. Amplitude of the BSR at Site 860 was weaker chemically, but not seismically. At all three sites on the transect, porosity decreased with depth faster than average, indicating overcompaction (Appendix 8). WSTP temperature gradient at Site 860 (~60°/km) had been lower than at Site 859.

A medical evacuation meant that target depth was not reached at Site 861. The objective was to determine whether a major subsidence episode had occurred in response to removal of material during subduction. Inorganic geochemistry trends (Appendix 8), however, were such as to reach fluids in contact with continental crust by the target depth, so that pre-cruise hypotheses were probably correct.

Three holes were drilled at Site 862 on Taitao Ridge ~100 m apart (Appendix 8). Recovery below the sedimentary cover was ~10%.

Site 863 was drilled above the subducted spreading ridge, but was not the hottest site. A thick section of approximately vertical bedding was drilled (Appendix 8).

Discussion

Taylor asked about the tectonic picture and accretionary processes revealed by Leg 141 drilling. S. Lewis replied that the spatial scale of the transition from subduction accretion in the pre-collision zone to collision zone extensional tectonism implied that material had been removed. Subduction erosion was, therefore, a result of ridge subduction. The transition from mass balance to subduction erosion took place within 30 km, less than half of the predicted 80 km.

Wednesday 22 April 1992

Leg 142: EPR/Engineering

Batiza reported that Leg 142 drilled three holes at Site 864 (Appendix 9). Site 864 was in a very well-surveyed area. Holes 864A-C were drilled in a ponded flow ~3.5 m thick, as estimated from an *Alvin* site survey. The two HRBs deployed were left at holes 864A and 864C.

Scientific results were based on recovery of ~20 kg of rock from Hole 864A (15 m penetration) and ~10 kg from Hole 864B (7 m penetration). Two igneous units were identified in normal MORB. Unit 2 contained gabbroic inclusions (Appendix 9). Hole 864B recovered only Unit 1. Most rocks were not recovered as drilled core, but in junk baskets and jammed into drill bits. One cylindrical piece was recovered by DCB. Rocks were essentially normal MORB, though the two units were distinguishable (Appendix 9). Thumbnail-sized crystal inclusions, rare at mid-ocean ridges, were of interest. They might give information about the underlying magma chamber.

In response to a question from Becker, Batiza explained that the original plan had been to drill ~1 km off-axis, but that the site had been moved on-axis because seismic velocities there were higher and there was, therefore, presumably less rubble. Leg 142 drilling did not penetrate deep enough to encounter rubble and verify the seismic interpretation. Tucholke asked whether TV images of the site had been obtained. Batiza replied that abundant data from four *Alvin* dives had shown that the ponded flow was flat, with some superficial cracking. This was in contrast to many rocks in the axial region, which were highly porous and unstable. A camera on the end of the drill string gave the same information. Austin asked which of the two guidebases Batiza would choose to reoccupy. Batiza answered that it probably did not matter; both were ready. Responding to a question from Malfait, Batiza said that the question of whether to move to an off-axis site during Leg 142 had been considered, but that the decision had been made to stay on-axis. Storms added that they had not wanted to spend time looking for an off-axis site.

Batiza went on to consider requirements for ridge crest/hostile environment drilling: 1) ability to spud hole on hard rock (guidebases, a Leg 132 problem), 2) ability to penetrate and case off rubble (i.e., bits that will not wear out, DI-BHA), and 3) ability to drill and core ahead (i.e., DCS). Only the last (DCS) was lacking. Failure of the DCS secondary heave compensator involved both software and hardware (bent feed cylinder? load cell problems?), but the reason was not entirely clear. It had apparently worked on Leg 132, so that failure had been unexpected. DCS failure had been unrelated to Site 864 rocks. As to the future of DCS, Batiza felt that it was too early to abandon DCS. Continued DCS development, however, would require a new look at secondary heave compensation and careful testing (bench, on-land and perhaps shallow water nearshore).

947. Preparation for the FY93 Program and Beyond

DCS Progress and Prospects: Leg 142/DCS Status Report and Fate of Leg 148

(Overheads which accompanied Storms' report were available at the meeting as a handout.) Storms acknowledged that Leg 142 had been disappointing in that no DCS core was recovered. Problems with the secondary heave compensator had been unexpected. Systems that had given problems on Leg 132, however, had worked well on Leg 142.

The goals of Leg 142 had been to: 1) to maximize DCS coring time, 2) achieve a minimum penetration of 100 mbsf, 3) achieve >50% recovery of fractured rock, 4) deploy the new three-leg/hexagonal-sided HRB, 5) evaluate feasibility of reaming 3.96" DCS hole to 7.25", and 6) evaluate second-stage DI-BHA with 7.25" bit.

Highlights of Leg 142 were: 1) all Leg 132 HRB deficiencies were corrected, though clearance in the moonpool remained tight; 2) hexagonal HRB performed exceptionally well and numerous reentries were made in ~15 minutes or less; 3) all deficiencies in the back-off system were corrected; 4) value of nested DI-BHA was demonstrated, achieving a 15 m cased hole, though bit life was a problem (only 10-15 m penetration/bit was achieved); 5) DI-BHA diamond bits demonstrated potential for operational use in drilling ridge crest environments (the single-cone, center bit appears to be the problem); 6) DCB demonstrated potential as a future effective coring system; 7) ruggedness of modified XCB latch, casing advancer latch and 4", 2-cone center bit was demonstrated; 8) prototype bit guide deployment/center bit recovery system and break-away safety joint was demonstrated; 9) all Leg 132 platform-mounted DCS

drill rig deficiencies were corrected (NB: secondary heave compensator was functional on Leg 132); 10) much was learned about EPR formations, drilling conditions and possible future drilling techniques.

The biggest disappointment of Leg 142 was failure to recover any DCS core (see handout). Penetration was only 15 m and recovery comprised fragments jammed in core barrel or bit. Secondary heave compensation software did not function correctly. The secondary heave compensator (hardware and software) did not work even when Leg 132 software was used. Reason were not clear, but it was not just a software problem. In reply to a question from Pyle, Storms explained that the software had been changed after Leg 132 because it had been written aboard *JOIDES Resolution* and needed to be cleaned up for Leg 142. It was possible that Leg 132 secondary heave compensation did not work as well as was thought and that Leg 132 had simply been lucky. That was being evaluated. Sea conditions on Leg 142 (usually 1-2 m swell, >3 m on occasion) were worse than on Leg 132. Occasional rogue swells might have pushed the secondary heave compensator to its maximum operating limit. The system, however, needed to work in the type of weather encountered on Leg 142. In reply to a question from Kidd, Storms said that the secondary heave compensator was designed to cope with ±12" of residual heave (heave left after primary heave compensation) on a 6 s period. A DCS review meeting at College Station on 6 April gave ODP-TAMU some different concepts to consider for secondary heave compensation. For example, the use of an accelerometer system might be eliminated.

Other disappointments (see handout) included failure of small-diameter cones on 6-cone DI-BHA bits. The failures cost time early in the leg. Five out of six cones were lost on the first bit. The sixth cone remained in good condition after 24 hors rotation, implying that failure was due to dynamic loads. It was necessary to use light bit weights when spudding hard rock holes and the slightest heave would lift the bit and then slam it down, leading to failure. It had been possible to drill with tri-cone bits, clean the hole and make progress. That had not been possible in the Atlantic (Leg 106). It should, therefore, be possible to use larger bit sizes for initial runs, rather than minimizing bit size as Leg 106 results suggested. In addition, diamond bits should be an effective option once the center bit problem had been corrected (single cone center bits would not drill effectively). Finally, J-slots and C-ring grooves in the casing hanger were damaged, possibly from rotation of hard-faced stabilizer blades.

Berger asked whether ODP-TAMU could now go back to Site 864 and place more casing. Storms replied that reoccupying Site 864 would require only 4" mills to grind up bit matrix left in the holes. Coring could then proceed. By grinding down J-dogs, access to casing hangers was achieved.

HRBs performed well and reentries were rapid. The electronic tilt beacon and mechanical "bulls eye" slope indicators performed flawlessly, (see handout for proposed action items).

Regarding the nested DI-BHA (see handout), fusing problems between back-off nut and landing seat were eliminated. All three back-off attempts were successful. It was difficult to know when the system was backed off (it had always been possible to tell on Leg 132). The difficulty was related to hostile drilling conditions at EPR. Perhaps the system should have been tested in a less-hostile environment, but if that had been done, many of the problems that were discovered would remain unknown. Taylor asked whether water depth was part of the problem. Storms replied that he thought that the problem was due only to the formation.

In reply to a question from Lancelot, Storms said that he doubted that failure of the secondary heave compensator had been related to the formation. Lancelot felt that failure of the secondary heave compensation system had prevented an effective ridge-crest test of DCS. Austin thought that LITHP was more comfortable about supporting DCS because it was tested at EPR rather than elsewhere. Storms added that DCS was a complex system, all elements of which had to work before the system functioned.

In response to a question from Berger, Storms explained that center bits were part of the nested DI-BHA system (see handout). The center bit plugs the 11.25" diamond bit during initial drilling. The center bit is removed so that the second string can be deployed. Single-cone and 2-cone center bits were tried. The single-cone center bit looked stronger than the 2-cone option. When tried, however, the single-cone bit made no new hole. The diamond bits were in good condition when they were pulled out and might have been simply pivoting about the single cone. Tests were being run by ODP-TAMU. Bits and center bits were needed that would hold up. Drilling results with the 2-cone center bit were encouraging. The bit was pulled out early, but was in good condition, suggesting that the single-cone bit was the problem.

Problems with the DCB (see handout) were related to fill in the holes. Flow ports were designed for small cuttings, not large rubble, and could not remove fill. They would be redesigned. In addition, stabilizer pads might have caused problems in getting full weight on bit. Some slick-walled barrels would be built.

Storms reported that the DCS secondary heave compensation system would undergo a complete reevaluation (see handout). Software and hardware would be reviewed. Feed cylinders would be repaired and modified. A full-scale test of the secondary heave compensation system was proposed, with heave induced with a suspension test cylinder. Redundancy of the secondary heave compensation was felt to be important. One approach was the present accelerometer system. A new concept was to use load variation of the drilling string itself. Tensile load fluctuates with heave. The concept was to monitor tension to determine the heave that was to be compensated. This would be an easier system to test on land than the accelerometer system. A third option was an entirely passive secondary heave compensation system (like the primary heave compensator). ODP-TAMU was not yet sure, however, that a passive system was possible. On the next DCS engineering test, ODP-TAMU would like to sail with more than one method of secondary heave compensation. In response to a question from Austin, Storms said that the time needed was ~18 months.

It must be kept in mind that many systems were included under DCS that had relevance to other operations, e.g., HRB, DI/BHA and bit development, DCB and modifications to top drive and mud pump control systems. Much progress had been made with the capabilities required for ridge crest drilling (see handout). A secondary heave compensation system was the last major requirement.

Leg 148 was felt by ODP-TAMU to be too early for redeployment of DCS. More time was needed to generate a second or third type of secondary heave compensation system and to allow development and testing of improved cutting structures for DI-BHA bits. The earliest appropriate leg for DCS testing was Leg 153 or later, possibly on the Mid-Atlantic Ridge in the MARK or TAG areas, ~18 months away.

Discussion

Pyle asked whether DCS III would be ready in 1995. Storms replied that ODP-TAMU felt that DCS III should be delayed until DCS II was operational. Pyle noted that that would push DCS III to around the next renewal time (e.g., if France renewed for 3 years at the upcoming renewal). Tucholke asked whether the secondary heave compensation system had been modelled. Storms thought that it might not have been correctly modelled. ODP-TAMU was considering new companies who might do a better job. Beiersdorf asked whether the 18-month delay before the next sea test assumed a stable budget. Storms replied that the cost of a land test was uncertain. It might not cost more than the slingshot test ($150,000) and should cost less, since no risk to equipment was involved with a heave test (in contrast to the slingshot test). Austin informed PCOM that, at the 6 April DCS meeting, testing on a platform other than *JOIDES Resolution* was again discussed. TEDCOM mambers felt that DCS testing must use *JOIDES Resolution*. He added that the land test was primarily a simulation for software. Storms, however, pointed out that the load fluctuation concept, if adopted, would be more conducive to land testing. Langseth questioned TEDCOM's attitude that *JOIDES Resolution* was essential for DCS testing. Austin replied that TEDCOM had endorsed elements of testing ashore, but was not sure whether it would be viable or cost effective. Langseth asked whether there were components of DCS which could be tested on another vessel. Austin replied that TEDCOM thought not. Storms added that drill bits and DI-BHA could be tested on a different vessel, but not the secondary heave compensator. Langseth felt that even testing subsystems on other platforms would help. Francis, however, noted that bids for additional platforms had been expensive. Langseth asked whether enough money was being devoted to DCS. Austin agreed that that was an issue that PCOM should address. In reply to a question from Duncan, Storms said that the drilling system worked and that there was no need to replace the top drive with a bottom drive.

Austin suggested dealing first with the fate of Leg 148. PCOM must decide on a program for Leg 148 if it was not to be an engineering leg. Hole 504B had been scheduled as a back-up at the Annual Meeting, but there had been some differences of opinion since then. Austin first asked whether any PCOM members felt that Leg 148 should still be an engineering leg. All supported a scientific (non-engineering) Leg 148. Austin then asked whether PCOM favored Hole 504B as Leg 148. Its advantages were that it was ready for drilling, no site survey was needed and it was potentially exciting science.

Lancelot felt that, if the decision to make Hole 504B the back-up was to be reconsidered, it must be on the basis of new information. Austin replied that there was none, just dissenting opinion. Cita-Sironi stated that the decision to assign Hole 504B as Leg 148 back-up had been made on the basis of information available at that time. Meanwhile, new rankings had been produced and OD-WG had also met again. She suggested two options: 1) the new Barbados proposal (414), which was an advanced experiment ranked very highly by SGPP, or 2) the revised Vema proposal, which was more advanced than HD. Kidd noted that it depended on the objectives at Vema. The new proposal was a major change. Langseth informed PCOM that he had been given strong comments by N. Christie-Blick (SGPP), who felt that the Hole 504B decision had been hasty and that the panels should be called in. Furthermore, Barbados was ready. Christie-Blick had asked whether Hole 504B science outweighed the opportunity of a new leg. In addition, would existing technology allow deepening of Hole 504B?

Malpas noted that LITHP had ranked Hole 504B top in its global ranking, ahead of Vema. Austin added that ODP-TAMU engineers believed that Hole 504B could be advanced, perhaps by 1-2 km. Tucholke recalled that, at the Annual Meeting, Storms had said that ODP-TAMU would like to return to Hole 504B as a stepping stone to deep holes on continental margins.

Francis raised the issue of operational problems. Vema was too far south to allow adequate days on site and Barbados needed much instrumentation. ODP-TAMU could not be ready for Barbados in 6 months. Austin added that a Barbados 3-D survey was scheduled for June 1992 and the data would not be ready for another year. The Barbados proponents would like those data. In reply to a question from Fox, Francis said that 15 m/day average penetration could be achieved at Hole 504B, or about 450 m in a leg. Austin stated that H. Dick , Leg 140 (504B) co-chief, thought that, based on geochemistry, Hole 504B had already reached the Layer 2/3 transition. Becker added that there was also some evidence of a geophysical transition. Duncan said that he had felt that the decision in favor of Hole 504B at the Annual Meeting had been hasty, but that there now seemed to be a basis for choosing Hole 504B. Austin noted that none of the panels had come up with eloquent opposition, though they had had the opportunity. PCOM passed the following motion.

PCOM Motion

In view of the results of Leg 142 and to allow for their proper evaluation, PCOM confirms: 1) a postponement of further engineering test legs of DCS on *JOIDES Resolution*, and 2) that Leg 148 will be a return to Hole 504B in order to deepen that hole and carry out attendant logging operations.

Motion Malpas, second Duncan Vote: for 15; against 0; abstain 1; absent 1

Austin pointed out that this motion meant that Francis' draft ship schedule would come into effect. PCOM still needed to consider the status and future of DCS. ODP-TAMU engineers wanted to delay the next DCS test until Leg 153 at the earliest. Legs 150 - 152 could not be changed because of weather windows.

Fox asked about cost. Austin replied that ODP-TAMU had estimated the cost of a Leg 148 DCS IIB test as ~$1M. BCOM had been able to make that available. Francis stated that it was too early to be specific about cost. The most important task was to perform an evaluation of the secondary heave compensation system. That would be done by an outside consultant and would take several months. Austin commented that BCOM might have to revisit the issue. $1M had been allocated for FY93. Beiersdorf asked what Leg 154 would be if Leg 153 was a DCS test. Austin replied that many programs were available. Beiersdorf suggested postponing the DCS test to later than Leg 153. That would release some pressure on the budget. Austin agreed, but cautioned against too great a delay, which might result in a loss of community support. Taylor proposed dissociating the decision about timing of the next DCS test from an expression of support for DCS development. The question of timing could be left to the 1992 Annual Meeting. Austin agreed, but said that he would prefer to insert a place-holder in the FY94 schedule (legs 153-158). Taylor suggested allowing DCS to compete with other science. Austin, however, responded that to leave DCS to compete with other science would be to make a statement indicating lack of PCOM support for DCS.

Langseth expressed concern about trying to incorporate a major engineering development (DCS) within an operational program (ODP). He asked whether DCS development should be separated from the operational science and given a separate budget. He felt that DCS was underfunded, lacked sufficient personnel, and had been under-assessed from a management (PCOM) point of view. Austin observed that industry was moving toward slimhole coring for some environments and ODP needed to drill those environments. There seemed to be no way to separate operational and development costs. Lancelot agreed with Langseth. He asked whether, in addition, engineering developments impacted the four-year schedule, which PCOM would be discussing at this meeting. Lancelot did not feel that PCOM had enough information

to say yes or no about DCS. A test of DCS's ability to drill in hostile environments had not been made. It was, therefore, too early to consider dropping DCS. Austin felt that, if PCOM did not continue to endorse DCS development, DCS would disappear. Taylor said that the scientific basis for DCS was good, but a development plan was needed. PCOM needed to know what would be done differently in future and on what schedule. Austin asked whether ODP-TAMU could provide that by the August PCOM. Francis answered that it could. Consultant evaluation was involved. He could not provide PCOM with enough information for the present meeting. Lewis stressed that cost estimates would also be needed. Austin agreed. Beiersdorf pointed out that the issue also involved the slimhole logging program.

Austin stated that PCOM needed to provide a philosophical endorsement. Langseth added that PCOM needed to say that it could not decide whether or not to proceed with DCS without sufficient information. Lancelot suggested that ODP-TAMU be asked to exert every effort to devise a plan and review the failure on Leg 142 before the August PCOM meeting. In response to a question from Kidd, Austin said that PCOM was not yet in a position to put a DCS placeholder in the FY94 schedule. A draft motion was presented by Taylor for discussion. Austin commented that PCOM needed a detailed development plan plus cost estimates by August. Lancelot suggested stating, in order to add urgency, that PCOM would decide on whether or not to proceed with DCS in August. Francis said that evaluation of Leg 142 should be included in the motion. Austin stated that ODP-TAMU should include shore and at-sea elements, though that need not be included in the motion. Kidd suggested keeping the motion short because PCOM was not sure whether the problems encountered on Leg 142 were big or small. PCOM should not send a message to funding agencies that the problems were major if they were not. Lancelot again advocated a preamble stating that the purpose of ODP-TAMU's work was to enable PCOM to make a decision on the future of DCS in August. Austin noted that shallow-water carbonates should be included as a lithology for which DCS was required. Lewis felt that DCS would improve coring in all environments. Francis, however, noted that DCS would not replace other techniques. He added that ODP-TAMU was planning evaluation by outside consultants and a cost of ~$50,000 was envisaged. Normally, ODP-TAMU would have to approach the international partners to enable international consultants to bid. Since time was short, however, Francis requested permission to use a local consultant. Austin replied that results were needed by August no matter how they were achieved. Francis said that ODP-TAMU would send out an RFP to the international partners, but he wished to alert them that it was probable that the deadline for responses would be past by the time the RFP arrived. There were no objections from the international members of PCOM. Malpas stressed that ODP-TAMU must provide to PCOM in August a plan to bring DCS to operational status. PCOM passed the following motion.

PCOM Motion

PCOM, recognizing the need to develop a high-recovery system for coring difficult formations, requests ODP-TAMU to prepare for the August 1992 PCOM meeting a detailed plan to bring the diamond coring system (DCS) to operational status. This plan should include an analysis of previous work as well as an estimate of future costs. PCOM will use this information to decide the future of DCS development in ODP.

Motion Taylor, second Lancelot Vote: for 16; against 0; abstain 0; absent 1

NON-DCS ENGINEERING DEVELOPMENTS

Austin recalled that PCOM had prioritized engineering developments at its April 1991 meeting. The objective had been to enable ODP-TAMU to cut items from the bottom of the list when funds or personnel were not available. PCOM would revise its prioritization following a review of non-DCS developments by Storms.

Storms reminded PCOM of its April 1991 prioritized list: 1) DCS, 2) XCB, 3) Leg 139 preparations (CORK, PCS, high temperatures - H_2S), 4) Leg 141 core orientation needs (HRO/SCM/electronic multishot), 5) VPC, and 6) MDCB (for GEOPROPS). Storms summarized the status of these developments (also see handout).

The XCB flow control concept had been designed, computer modelled and tested on Leg 141. Recovery decreased, rather than increasing, relative to basic XCB. Testing was abandoned due to severe erosion of the BHA wall. Second generation design had begun to allow for variable flow rate control to cutting shoes and protection from destructive erosion effects on BHA hardware. The next possible sea trial was Leg 146 (CA). Lancelot asked whether recovery of alternating hard/soft lithologies was being evaluated. Storms replied that ODP-TAMU had focused on general lithologies, because XCB was the most commonly used coring system. The cutting shoe jets tended to become plugged on the existing XCB. In reply to a question from Austin, Storms said that the ODP-TAMU engineers responsible for XCB work were Huey and Reinhardt.

The CORK system worked well on Leg 139 and two additional CORK assemblies were being prepared for Leg 146 (CA). Some modifications were being made, associated with HRB compatibility and flexibility of the system with different casing hanger designs. Malfait asked whether interested scientists were being informed of the design changes. Storms replied that they were, but that such changes would not affect them.

PCS was deployed 12 times on Leg 141. No solid hydrates were encountered. PCS Phase I (PCS I) was operational with some minor design problems remaining. PCS was complex and the operators were on a learning curve. Out of 22 runs, 6 had been fully successful (see handout). The track record would not reach 100%, but should improve. Francis informed PCOM that ODP-TAMU engineers Huey and Pettigrew had produced a good report on PCS (report was available at the meeting). The report stated that a gap existed between ODP-TAMU's responsibilities concerning PCS and the wishes of the scientific community. Extraction of fluids had not been properly addressed. Beiersdorf asked who wanted to use PCS and would take care of it. Francis replied that SGPP was the most interested panel and there were many other individual scientists interested in the capability.

Hard rock orientation (HRO) involved three elements (see handout): SCM (which logged core as it entered the core barrel), scribers and magnetic electronic multishot. SCM was deployed on Leg 141 in XCB mode, though it was now compatible with RCB and XCB. There had been some minor software problems, but SCM was basically operational. Results from Leg 141 were included in the handout. The ultimate goal was to get SCM measurements in real time so that the driller was aware of recovery as it was happening. In response to a question from Fox, Storms agreed that SMP wanted SCM for core-log integration. Electronic multishot was also working well.

APC core barrel parts modified for VPC use on Leg 133 had been cleaned and refurbished. VPC was on hold, partly because T. Pettigrew had been working on CORKs and also while awaiting evaluation of Novatec modifications. The latter had been completed (see handout) and the changes would be incorporated in ODP-TAMU's VPC. A laboratory test would be carried out in May and two VPC tools were scheduled for deployment on Leg 146 (CA). Francis added that Leg 146 would be the last opportunity to test VPC before Leg 150 (NJ/MAT). Austin asked whether Leg 146 Co-Chiefs recognized the need for a test. Francis acknowledged that it might be useful for PCOM to insist on a VPC test on Leg 146. Storms noted that VPC had to be tested in an unconsolidated section. There was no point in testing it in other sections. In reply to a question from Lancelot, Storms said that if an appropriate formation was not encountered on Leg 146, a test there would be up to the Co-Chiefs. They should not be forced to test VPC in an inappropriate formation. Kidd agreed that Leg 150 would need VPC, but added that unconsolidated sediments would also be encountered on Leg 149 (NARM non-volcanic I). Francis responded that, if VPC was tested on Leg 149, there would be no time for modifications in time for Leg 150. Austin commented that it was sometimes necessary to test a tool on a leg that needed it.

Storms reported that MDCB was considered operational. Minor design improvements were to continue during 1992.

At the 1991 Annual Meeting, PCOM had asked about the capability to drill beep NARM non-volcanic sites. ODP-TAMU had prepared a draft report on current ODP deep drilling capabilities, which was ready for review with TEDCOM in May. Both IAP-1 and NB-4A were considered drillable with existing technology. Penetration of 2500-3000 m could be achieved within one to two legs (60-80 on-site days), depending on the number and depth of casing strings required and weather (see handout).

Storms concluded his review with consideration of a possible future engineering development project: deep water and/or deep-penetration drilling operations. A number of hardware and equipment items would require upgrades or modifications to achieve deep drilling goals (see handout). Upcoming NARM legs meant that all needed to be looked at and should be included in PCOM's prioritization. A draft RFP for potential future ultra-deep drilling had been prepared and was ready for review with TEDCOM in May. The drilling parameter monitoring system (TOTCO, TOTCO alternative, DCS) was being furthered on a time-available basis. It was important for core-log integration. Langseth felt that the drilling parameter monitoring system should be higher on the list.

ENGINEERING PRIORITIZATION

Austin felt that PCOM might not wish to include DCS in the prioritization list, as it was the focus of a separate motion. Taylor, however, noted that DCS would automatically be top of the list because ODP-TAMU must respond to PCOM about its development by August. Austin recalled that the April 1991 prioritization had listed DCS, XCB, followed by leg-related developments. PCS was needed for Leg 150. After Leg 146, CORKs would not be needed until FY94. HRO was required for legs 149/152 and 147/148. VPC was needed for Leg 150 and a test on Leg 146 was possible. MDCB was needed for Leg 146, after which it would not be required until FY94 at the earliest. Storms, however, pointed out that MDCB could be used for getting a few basement cores without tripping XCB and might, therefore, be useful for, e.g., Leg 145. Austin added that PCOM must also consider deep drilling and the drilling parameter monitoring system.

Francis commented that it would be helpful to have some idea of costs and level of commitment. Austin responded that PCOM had heard in April 1991 that ~50% of ODP-TAMU engineering time was required for DCS. Francis added that availability of personnel was the limiting factor, rather than money, except with DCS.

In reply to a question from Langseth, Storms said that MDCB no longer required an engineer now that it was operational. Langseth expressed interest in seeing MDCB used more to assess its capabilities. Storms agreed, highlighting the need to deploy it in different environments. Langseth, therefore, suggested taking MDCB off the prioritization list, but encouraging its use. Lancelot suggested testing MDCB in hard carbonates. Storms, however, explained that formations in which MDCB was used had to be drillable with XCB.

Berger asked whether ODP-TAMU engineers were satisfied that soft, gas-rich sediments could be recovered. Storms replied that that was done using standard APC. Austin, citing Leg 138, noted that even triple APC coring left gaps. Berger suggested that coring of soft, gas-rich sediment be added to the list. Taylor, however, pointed out that that was done well already compared to other things. Beiersdorf felt that the list should be revised, since some objectives had been partially achieved. Malpas thought that SCM should not be considered leg-specific, because it was related to core-log integration.

Francis explained that ODP-TAMU wanted clarification about where its responsibilities with regard to PCS ended. PCS I was finished, but the interface with laboratory equipment needed work. Austin thought that M. Kastner and G. Brass were working on that. He asked whether any feedback had been received from them. Francis pointed out that they were not working on PCS I. Austin stated that, in his opinion, ODP-TAMU should include extra steps, i.e., measurments on the PCS core recovered. Storms countered that that had not been the original plan. Extra development had been a third-party matter. ODP-TAMU had no plans to make changes to PCS I. Tucholke suggested getting the message to SGPP to move on this issue. Francis responded that the Huey/Pettigrew memo did that. Lyle remarked that SGPP felt that PCS needed to be run to gain experience. Austin added that SGPP had also recommended a third PCS device. PCS was in a separate category: it was not a development tool, but its use was to be encouraged. Becker asked for clarification of remarks on Agenda Book blue pages 18-19, which indicated that some items had been taken over by engineering. Francis answered that that was incorrect. Kidd felt that it would be insufficient to simply encourage use of PCS. PCS had been around for a long time. Kidd felt that PCS sampling should be ODP-TAMU's responsibility. Pyle, however, asked why ODP-TAMU should develop the system if nobody outside was prepared to take it up. Austin agreed.

Storms stated that some items on the list had advanced during the last year and required a lower-level effort. In general, the list should be kept as short as possible. Any extra time gained should go to DCS and deep drilling. In response to a question from Taylor, Storms said that XCB work had not been completed and XCB was, therefore, still a list item. There was a constant effort to refine APC, XCB and RCB. Taylor suggested that, in that event, XCB should not be on the list. Ongoing development was always needed. Austin cautioned that, if PCOM did not mention XCB, it implied PCOM did not consider it important.

Lyle recalled that a manifold for use with PCS had been on Leg 142. It had not been the best system, but it could be used. There was, however, no way to handle solids. Francis stated that extracting solids under pressure would require PCS II. There was also a feeling that, even if PCS I held pressure, the capability to extract gases and fluids was insufficient. Lyle reiterated that that could already be done. Francis felt that the problem was related to contamination. The

existing manifold could not be flushed. Storms added that the manifold had been built onboard *JOIDES Resolution*. Francis said that much money had been spent on PCS and yet the extraction system was inadequate. Austin felt that, if the system was to work, it must be developed in-house. Becker noted that M. Kastner would be on Leg 146, but Francis stressed that her work involved PCS II and extraction of cores.

Francis argued against placing deep drilling too high on the list. It was theoretical and not planned for any leg, whereas VPC was needed for Leg 150. Austin countered that deep drilling would be needed for Leg 149. Francis, however, said that it was his impression that Leg 149 could be drilled with existing technology. Storms stated that he would rather develop tools based on perceived future needs, rather than for specific legs. Francis reiterated that Leg 149 sites, even the ambitious ones which were not yet scheduled, could be drilled with existing technology and questioned the need to place deep drilling high on the list. Becker replied that thematic panels had highlighted the importance of deep drilling. Austin added that it would send a signal that PCOM considered deep drilling important. Tucholke recalled that, at the 1991 Annual Meeting, ODP-TAMU had claimed not to be ready for deep drilling and now seemed to be reversing its position. He supported including deep drilling on the list. Francis reminded PCOM that it had said, in April 1991, that development should respond to scheduled legs. Austin said that short-term goals were still needed. Langseth stated that it was the specific engineering tasks associated with deep drilling which should be on the list. Austin responded that deep drilling was a scientific objective and it was up to ODP-TAMU to tell PCOM what was needed. Storms agreed that it was best not to put every item on the list.

Francis highlighted the importance of a drilling parameter monitoring system (e.g., TOTCO) and advocated placing it on the list. Storms explained that the TOTCO system was not working for two parameters (total depth and rate of penetration). This was critical because those parameters were harder to estimate without a riser. Francis said TOTCO seemed not to work for a number of parameters. Lancelot added that, in addition, the data were not available to the Scientific Party in real time. Malpas suggested adding to the list engineering priorities for core-log integration. That would include core orientation and TOTCO.

Austin asked whether there were any leg-specific goals, e.g., extra PCS I units, or a move to PCS II. Lancelot suggested testing of MDCB on Leg 144 in hard carbonates. Storms responded that Leg 144 drilling would primarily involve RCB and, therefore, MDCB could not be used. Lancelot suggested testing MDCB in B and C holes and making the Co-Chiefs aware that it could be tested. Storms felt that it might be worthwhile to make the statement on XCB more generic, i.e., to include further development of RCB and APC. Austin asked whether a generic statement would be sufficiently helpful to ODP-TAMU. Storms said that the rotary drilling system would be used a lot in the future for Hole 504B and deep NARM sites and should perhaps be included. Austin agreed, but felt that it should be included as a separate item on the list. Beiersdorf suggested inclusion of a study of stretching of APC cores, as highlighted by OHP. Francis felt that that would be fine tuning of APC and perhaps less important than the coarser problems with other technologies. Austin agreed that it was probably not necessary to focus on APC. Taylor asserted that APC, XCB and RCB were not of the same order of importance as DCS, HRO, etc. Austin, therefore, agreed to group the former "bread and butter" drilling systems under a single item. Kidd noted that PCOM was assuming that MDCB was operational. Austin responded that more information about MDCB would be available after the major test on Leg 146. PCOM could not say more now.

Austin noted that uncertainty remained about what was meant by PCS, i.e., PCS I or PCS II, and what ODP-TAMU's responsibilities were. He did not envisage a third party coming forward. He proposed that PCOM tell ODP-TAMU to make PCS part of a long-term effort.

Watkins asked how much effort would be involved. Francis replied that PCS II was a major system. ODP-TAMU was only talking about PCS I.

Austin stated that the minutes would reflect that PCOM discussed PCS II, but that ODP-TAMU was working on PCS I. PCOM's motion should include a statement to the effect that MDCB was operational. Francis noted that CORKs could not simply be considered operational, because a new CORK had to be built for every deployment. Taylor observed that PCS was also operational. Austin agreed, but noted that SGPP had wanted a third PCS. That was not an engineering development, but it required effort. Blum stated that SGPP suggested two complete PCSs for Leg 146 (CA). Only one PCS had been available on Leg 141. Cita-Sironi agreed. Austin agreed that PCS could be placed in the same category as MDCB, i.e., that PCOM wanted to see them both used. Arculus referred to the SGPP minutes (Agenda Book, white page 183). He read that SGPP had requested "a second, if not even a third," PCS for Leg 146. Austin reiterated that PCS and MDCB should be left use-related. Becker asked, as a third-party involved with CORK, whether the implication was that CORK was now a development tool and not a third-party tool. Austin replied that CORK could remain a third-party tool. PCOM passed the following motion.

PCOM Motion

Based upon advice by ODP-TAMU engineers, PCOM considers the following tools now operational: CORK, PCS I and MDCB. Their use should be encouraged by the Science Operator and the appropriate panels, with care that appropriate financial planning is in place.

PCOM now prioritizes engineering developments as follows:

1) **System developments:**
   a) **DCS evaluation and improvements.**
   b) **Engineering developments for core-log integration, including TOTCO, core orientation and sonic core monitoring.**
   c) **Deep drilling system/capability.**
   d) **Improvements in existing coring techniques, i.e., APC, XCB and RCB.**
2) **Leg-specific developments:**
   a) **Vibra-percussive corer in preparation for legs 146 and 150.**

Motion Beiersdorf, second Langseth Vote: for 15; against 0; abstain 0; absent 2

PRIORITIES FOR DOWNHOLE MEASUREMENTS

Lyle reported that the FMS tools had received extensive maintenance after Leg 140 and the caliper problems, which led to junk in Hole 504B on Leg 140, had been rectified. Shipboard FMS processing continued to be a success, but there were logistical difficulties involving shared ODP-LDGO/ODP-TAMU technicians. Turnover of shipboard personnel was too rapid. A permanent solution had not yet been achieved. Francis commented that the problem had been a result of making some of the technicians into extra computer systems people.

Lyle informed PCOM that the Japanese magnetometer had been successfully deployed at Site 865 on Leg 143 on its first ODP trial. No news on data quality had yet been received.

The high-temperature (350°C) logging cable test (Gable) was not tested in a 300°C geothermal well in the Mojave Desert in February, as originally planned, because of logistical problems. That well has since been reopened, but a logging tool was lost in the well by the geothermal company (wireline broke because of fluid-induced corrosion). The casing may also have collapsed. The current plan was to test the high-temperature cable in the summer in coordination with Peter Lysne (DOE).

The high-temperature resistivity tool was being developed by Camborne School of Mines, UK. A field test of electrode array configuration in February was successful. Electronic and thermal systems design was complete and prototypes were being constructed. The tool was on schedule for autumn delivery.

The shear source tool (D. Goldberg, ODP-LDGO) prototype was in the final stages of assembly. An on-land field test was planned for May.

Lyle went on to address logging data distribution. Based upon results of a survey and IHP recommendation, ODP-LDGO planned to discontinue FMS microfiche inserts in May 1992 (beginning with Leg 140 volume) and rechannel related funds to production of CD-ROMs with all logging data for each leg. CD-ROMs would either accompany the leg volume or be sent separately to the same mailing list. In response to a question from Berger, Lyle said that there were no plans to produce CD-ROMs retroactively with present funds. Replying to a question from Pyle, Lyle said that images of log results would still be included in the backs of leg volumes, so that access to a CD-ROM reader would not be essential. Berger stated that many people were interested in Leg 138 logging results, but noted that they would not be available on CD-ROM. Lyle responded that N. Pisias (Leg 138 co-chief) was independently making a CD-ROM of some data, but not logs.

ODP-LDGO wanted to test ways of getting logging data to the scientific community. ODP-LDGO planned to place a subset of the logging data on-line in FY92 to test electronic data distribution concepts (e.g., ease of access, ways to record data receipts, ease of educating scientists in on-line use).

ODP DataNet

ODP-LDGO had decided to be proactive and propose a DataNet system (see white paper on ODP DataNet Services, Agenda Book, white pages 367-389). It was planned that DataNet would be active at least by the end of the next four-year Program Plan. All components were already in existence. NASA was already operating such a system. DataNet would formalize many informal links that already existed within ODP.

DataNet was proposed for a number of reasons. Only minimal processing was currently possible, e.g., FMS images were produced, but were not being analyzed, sonic waveforms were not processed, geochemical logs received minimal interpretation, temperature data were not systematically examined and integration of core and log physical properties was at a rudimentary stage. In addition, a new generation of logging tools was appearing, e.g., MAXIS for use with very high data flow/imaging tools. ODP-LDGO could not afford to upgrade within the existing budget. Also, the ODP data stream had increased dramatically, but the data distribution scheme was not being changed. That was true for both logging and laboratory data. Finally, the existence of "orphan facilities", e.g., permeability/fluid flow and specialty logging tool development, mandated changes.

(Shipboard and land-based DataNet components are listed in Appendix 10, which also lists institutions that have expressed interest in providing each component.) The shipboard computing environment needed to be updated to allow real-time access to data. Shipboard logging needed MAXIS for use with the next generation of imaging tools. Other downhole measurements should be performed, e.g., hydrogeological experiments and downhole seismics. Fast ship-to-shore communications were needed. At present, shipboard data took about one month to get back to ODP-LDGO and data were often missing and had to be rewritten onboard *JOIDES Resolution.* A real-time connection was required. Processing rate could only be increased by adding processors at sea, and thereby displacing scientists, or by passing data faster to processors onshore. This would also allow real-time trouble shooting and the possibility of shore-based leg participants.

On-land (Appendix 10), ODP-LDGO would remain the hub for data, including raw logging data archive and distribution, quality control, processed data archive and on-line access to all ODP digital data. Distributed processing nodes would be located in UK, France (which was willing to commit funds external to ODP), Germany and Canada/US (for core-log integration).

Discussion

Austin explained that DataNet had been proposed to EXCOM in January 1992. It would cost ~$5M more than the existing logging budget (~$9M versus ~$4M). EXCOM decided to have the concept reviewed by the panels, who had endorsed the concept without considering cost. PCOM could do the same, bearing in mind that some subcontractors might change. Lancelot noted that Lyle had presented a mixture of the original ODP-LDGO DataNet proposal and subsequent actions. PCOM could not go into details regarding subcontractors, but could endorse the concept as an improvement to the system.

Austin said that EXCOM had wanted to examine community feeling about data flow to see whether EXCOM needed to come up with extra money. Fox characterized the DataNet concept as "a vision" that outlined a real need. SMP had flagged it as important. Fox did not feel that ODP-LDGO's plan was yet mature, adding that that would require input from others outside ODP-LDGO. It provided a catalyst to get people thinking, however. Lyle agreed that it was a vision. It did not all have to go into place at once. Duncan felt that it was an exciting idea. ODP would have to move in that direction. It had huge implications for how the shipboard Scientific Party was defined. He asked how the Shipboard Party could be guaranteed priority with the data. Austin replied that ODP-LDGO had felt, in January, that protection could be provided.

Austin stated that he would like to be able to tell EXCOM that PCOM had considered the DataNet concept, the specifics of which might change, and thought it useful. Berger asked whether there was any sense of who would use the data and whether it would be used. Lyle responded that DataNet would allow others to process log data, e.g., to use the sonic waveform. Berger asked whether there was any projection of the importance of particular data and their usage. Austin explained that FMS had started this move. The concept resulted both from the problem of limited personnel at ODP-LDGO and increasing post-cruise success. Taylor said that it was not currently possible to get real-time analysis of FMS and geochemical tool data even with the right people present. Arculus suggested that ODP-LDGO promote ease of access by remote users. Lyle replied that ODP-LDGO wanted that, because data distribution was a large part of ODP-LDGO's workload. Francis commented that that involved land-to-land access. He was more concerned about data transfer from ship to shore and back to the ship again. That would be expensive. People would have to be found onshore to do the work.

Lewis said that a technology revolution was underway. It would be necessary to address both how to take advantage of that and how to acquaint the community with procedures for data access. Francis expressed concern about costs of data transmission. Beiersdorf asked whether any non-US institutions involved would be paid from ODP funds, or be expected to get money from other sources. Lyle replied that some commingled funds and some extra, outside funds would be involved. Austin added that more money would unavoidably be required. In response to a question from Lewis, Francis said that telephone time to the ship cost $10/minute. Lewis noted that there were alternative satellite systems and that, with heavy use, rates might fall. Beiersdorf said that he would feel more comfortable if all of the money came from a single source. Langseth felt that it might be useful for ODP-LDGO to put together a proposal focusing on the pilot program that Lyle had mentioned. Arculus commented that geochemistry data was little used at present and that was worrying. That was where the pilot program should focus.

Lancelot stressed that PCOM should stick to consideration of the concept, because the funding aspect was wide open at present. It was premature to discuss details, even those of the pilot program. Austin agreed. He asked whether there was any dissent from the idea that PCOM would like to improve on the *status quo*. Kidd felt that PCOM would have to make it clear that additional costs would be involved. Lyle stated that DataNet would cost <$9M. Austin said that the cost would depend on how much was absorbed by new operators. Lancelot agreed, adding that it might cost ODP no more than at present. Kidd raised the issue of access to shipboard data and rights of the Scientific Party. Austin responded that policies would not be changed. Watkins was reluctant to support the concept. He said it showed promise, but needed more work. Gibson said that the DataNet database (GeoBase) was more of a geographical browser system. SMP had got it right. Gibson quoted from the SMP minutes (Agenda Book, white page 345): "The database specifically proposed (GeoBase) is not truly a database, but a database browser specific for geographic information. The 'proposal' does not address the real requirement of a functional relational database which is an essential requirement for both shipboard and shore-based science. The panel encourages submission of a more detailed proposal for review." Lyle responded that the first-order problem was to get a subset of the data out, then get the database organized. Taylor noted that DMP had recommended that it was important to allocate appropriate personnel to data distribution and that computer access to a central archive of log data should be explored with a view to its potential adoption (Agenda Book, white page 114). Austin stated that all panels had supported the DataNet concept. Lancelot added that the ODP was now producing numerical data in large quantities. Because of that, ODP had to face the need to change its approach. It could not continue with the *status quo*.

Austin asked whether ODP-LDGO needed help from PCOM with prioritization of logging tool development. Lyle replied that ODP-LDGO felt that a magnetic susceptibility tool was a high priority. It might be good to hear a statement from PCOM on that. Austin said that PCOM input at this stage seemed unnecessary and that, in any case, PCOM would have to return to the issue of slimhole logging when it discussed DCS in August. He suggested delaying further consideration of logging prioritization until August. Taylor asked whether ODP-LDGO needed guidance on nothing but slimhole logging, i.e., that the only tools ODP-LDGO was looking to acquire were high-temperature and/or slimhole tools which were guided by DCS considerations. Lyle replied that there were others that were third-party tools, e.g., high-temperature resistivity tool, and high-resolution susceptibility, which ODP-LDGO would like to follow up, though PCOM could tell ODP-LDGO not to do so. Fluid sampling tools would have to be deferred for now. PCOM passed the following motion.

PCOM Motion

PCOM supports the DataNet concept as outlined in the White Paper prepared by ODP-LDGO, Wireline Logging Services Operator, to improve real-time core-log integration and data reduction, interpretation, archiving and dissemination.

Motion Malpas, second Cita-Sironi Vote: for 11; against 1; abstain 4; absent 1

DH-WG

Austin stated that, before discussing prioritization of non-engineering equipment needs, which Panel Chairs had been asked to provide, he was calling upon Gibson to report on DH-WG and its recommendations. Those recommendations were relevant to non-engineering equipment needs.

Gibson reported that DH-WG had been charged to evaluate computing in ODP and make recommendations. DH-WG included representatives from selected JOIDES institutions and international partners, SMP, IHP and DMP.

DH-WG believed that changes in the shipboard computer system were required immediately for the following reasons. 1) The work of shipboard scientists was being seriously hampered by the shipboard computing environment. 2) Integration of logging results with core data was also essentially impossible within the confines of the present shipboard computing environment. 3) Ship-to-shore data communications were poor, making real-time shore-based interaction with ongoing drilling difficult (being addressed by ODP-TAMU). 4) Presently installed VMS-based S1032 database system was totally inadequate and unfriendly. It could not handle large datasets (e.g., GRAPE). As a result, ODP was unable to archive shipboard data rationally for post-cruise and subsequent study. 5) Access to ODP data needed to be improved (e.g., as suggested by ODP-LDGO).

DH-WG proposed the following changes. 1) A large, UNIX-based online database in a client-server configuration. A UNIX computer should be dedicated to the database function. 2) A network of client PC-386 and MAC data-acquisition modules feeding data into the online database. 3) Powerful IBM-PC, MAC and UNIX workstations for data retrieval and interpretation. Many of the computers required for recommendations 2 and 3, except for UNIX workstations, were already onboard *JOIDES Resolution*. 4) A parallel shore-based system, accessible over Internet, to house the ODP multi-leg database, and linked to the ship by improved satellite communications for update, perhaps to be done weekly.

DH-WG also considered how the proposed changes should be made. 1) Development of new hardware and software configuration must proceed in parallel with ongoing shipboard activity, which must not be disrupted. 2) Changes should be viewed as an "add-on" package of hardware and software that can be developed onshore and then added to the shipboard environment. 3) Installation could be accomplished at a North American port call. 4) Each laboratory could then be moved to the new environment during the following leg(s). 5) Benefits of the new system would only be realized when the majority of data were stored in the new environment. As a result, changes should be made soon and duration of any transition phase should be minimized.

The proposed changes would bring the following benefits: 1) core-log integration during legs; 2) core-core correlation in real-time (as on Leg 138), and hence an ability to dictate drilling on the basis of an evaluation of core recovered; 3) greatly improved onboard access to shipboard data, and hence better interpretation of data and improved shipboard science.

(A diagram illustrating differences between the existing and proposed shipboard computing systems is shown in Appendix 11.)

Gibson explained that DH-WG had not felt that it had been within its mandate to suggest how to implement its proposed changes, should PCOM accept them. Nevertheless, Gibson presented three possible alternatives for PCOM. 1) Advise ODP-TAMU to adopt the DH-WG report. 2) Advise ODP-TAMU to adopt the DH-WG report and to subcontract work to outside groups. 3) Advise JOI, Inc. to contract work suggested in the DH-WG report to an outside group which would liaise with ODP-TAMU. Alternatives 2 and 3 would best be carried out in cooperation with a steering committee comprising a subset of DH-WG.

Gibson felt that PCOM might prefer alternatives 2 and 3, because the Dorman subcommittee of EXCOM had already asked for interest in bidding on computing. Such bidders could be asked to bid in the new system. Furthermore, ODP-TAMU had little experience in UNIX systems or in client-server database systems.

Discussion

Lancelot commented that the DH-WG meeting had been efficient and short, thanks to Gibson, and its conclusions had been virtually unanimous, with no dissent on fundamental aspects. Malpas stressed the need to act quickly, as the problem was building and impacted both engineering and non-engineering items.

Austin noted that the panels had included elements of the DH-WG recommendations in their non-engineering prioritization, under core-log integration (workstation and software) and capital replacement equipment (computer and software replacement for data handling). PCOM should discuss whether to endorse DH-WG's recommendations in whole or in part and then consider implementation. PCOM should remember that endorsement would have a financial impact on other items in the non-engineering wish list not related to DH-WG. The recommendations would cost an estimated $300,000 - $400,000, mostly for software.

Malpas felt that there was no other direction to take. Kidd noted that the emphasis was on what could be done onboard *JOIDES Resolution*, but the system was unfriendly for shorebased workers too. Lewis stated that PCOM would be endorsing what was in the DH-WG report. In response to a question from Berger, Gibson replied that DH-WG would like to have use of UNIX included in any endorsement, as it was ideally structured for multiple access.

Austin stated that implementation would be linked to endorsement in PCOM's motion. A steering committee was needed to consider details. Malpas asked what ODP-TAMU thought about Gibson's three scenarios. Francis replied that, if the work was given to outside contractors, ODP-TAMU would still have to learn about UNIX. There was a lot to be said, therefore, for having ODP-TAMU involved. ODP-TAMU might decide to use subcontractors in any case. Francis supported Gibson's implementation alternative 2, adding that ODP-TAMU would be glad to work with a steering committee. He felt that the effort required for

implementation might have been underestimated. Two systems managers were needed for the existing system, but a third might be needed with the new system.

Malpas asked if outside interest could be explored, as the Dorman subcommittee had done. Austin replied that that could not be done before the June EXCOM meeting. Taylor stated that the University of Hawaii had responded to the Dorman subcommittee request by expressing interest in the computer database. A database demonstration had been given to SMP in Hawaii. The cost estimate was $600,000. Taylor added that there was information before PCOM already. Francis expressed concern about PCOM deciding on a method of implementation when there were people around the table representing institutions putting in competing bids. Austin said that Hawaii's response was just a statement of interest. ODP had subcontractors now and new subcontractors would have little involvement in changes to be made in the next two years. Malpas asked for an updated cost estimate from ODP-TAMU, noting that ODP-TAMU's estimate of $350,000 had been made some time ago, and some comments on feasibility, i.e., in-house expertise versus consultants. Austin said that the money would not exist if there were to be only six international partners, unless DCS was dropped. Lewis agreed with Malpas that ODP-TAMU should provide a cost estimate. In reply to a question from Austin, Francis said that ODP-TAMU could provide such information by the August PCOM. That was one reason that ODP-TAMU had reorganized computing and database departments. SOE money would be required, implying seven international partners (see BCOM report). Malpas asked whether the steering committee could be asked to report by August, having considered the views of ODP-TAMU and also of other interested parties (e.g., Hawaii). Gibson stated that IHP had been very aware of how stressed all ODP-TAMU groups were. They must not be overloaded. Francis, however, thought that if implementation alternative 3 was chosen, the outside group would come straight to ODP-TAMU and overload it.

Austin concluded that the steering committee must work with ODP-TAMU and report back to PCOM in August. Francis felt that the steering committee should focus on technical aspects. Austin said that the steering committee would not communicate with the community to solicit bids. Lancelot, noting that DH-WG had discussed the matter at length, asked which implementation alternative DH-WG would prefer. Gibson replied that DH-WG would prefer an outside perspective on the cost of the change, rather than going straight to ODP-TAMU. Francis felt that the steering committee could provide that. Gibson agreed that it could, provided it was given enough freedom.

Austin nominated Gibson to chair the steering committee. Malpas asked whether the steering committee would report in conjunction with ODP-TAMU. Austin replied that the steering committee could take the lead, so long as ODP-TAMU was in the loop. Pyle assumed that the steering committee would be advising ODP-TAMU. Malpas said that ODP-TAMU had to be involved, but that there were also other interested parties. They should be identified and considered. Francis said that those other interests were expressed in the context of the Dorman subcommittee report and that this matter had nothing to do with the Dorman subcommittee. Malpas agreed, but stressed that the steering committee should be free to explore the possibility of other interests (e.g., perhaps different from those replying to the Dorman subcommittee). Those interests could be subcontracted through ODP-TAMU. Francis had no objection to that. Austin said that PCOM would need to empower Gibson and the steering group to take action before August. Francis and Kidd did not feel that this had anything to do with Dorman subcommittee activities. PCOM would get a report and subcontracting would be decided elsewhere. Arculus asked whether the steering group would have time to do the chasing around involved in implementation or whether it would just advise ODP-TAMU. Francis agreed that that was a good point and expressed the opinion that the donkey work would be done by ODP-TAMU because volunteers would not do it. Gibson agreed, but said that he would like the

freedom to examine outside interests. Lancelot suggested that the steering committee, which had UNIX expertise, could provide intellectual leadership. That would help ODP-TAMU, which lacked that expertise. Malpas questioned, with regard to implementation alternative 2, what type of work would be subcontracted. He noted that alternative 2 implied that ODP-TAMU would be required to enlist subcontractors, not that subcontracting was optional. He felt that alternative 2 needed to be rewritten.

Austin suggested that the steering committee should not contain more than three to four members, all prepared to be substantively involved before August. Gibson could provide him with names which Austin would approve. Francis noted that the steering committee would have to exist for two years to guide the process of change. Austin responded that the steering committee would remain, though its membership might change. In response to a question from Taylor, Gibson said that the steering committee could not simply be drawn from IHP members. Taylor wondered whether, in that case, the membership of IHP should change. Gibson answered that that was under consideration.

Austin said that DH-WG would not be disbanded yet, because the steering committee would continue. PCOM passed the following motion.

PCOM Motion

PCOM endorses the DH-WG recommendations, as contained in DH-WG's minutes of 5 - 6 March 1992, and requests of I. Gibson a list of possible candidates for a steering committee that will continue to work with ODP-TAMU on this issue. ODP-TAMU and the steering committee should jointly prepare a report for PCOM outlining the likely costs and implementation schedule to achieve the recommendations of DH-WG. This report should be presented at the August 1992 PCOM meeting.

Motion Lewis, second Kidd Vote: for 16; against 0; abstain 0; absent 1

NON-ENGINEERING EQUIPMENT NEEDS

Austin questioned whether PCOM would want to consider items other than those at the top in each category of the panels' prioritized non-engineering wish list (Agenda Book, blue page 18). Those categories were: core-log integration, capital replacement equipment and new/improved equipment (Agenda Book, blue page 18). Austin added that he would like to return to the issue in August after PCOM had some information on costs. Berger thought that that would be acceptable as long as the list was not just ignored. Austin noted that, in any case, most panels would not meet again before August. The list would, therefore, still be the same in August and PCOM would have a better idea about costs. Becker agreed, unless any equipment was vital for upcoming legs.

In reply, Francis gave the SMP equipment status report. Under core-log integration: the natural gamma system had been defined and an RFQ would be going out in a month, software and MST upgrade and also resistivity equipment were under review, and the workstation was on hold. Real-time navigation was in progress, as was the reference slide collection for shipboard use. The color scan system was on hold; A. Mix's system would not be on Leg 145, but it was planned to purchase a Minolta color gun. Work on the bar code system for cores was in progress. An off-the-shelf carbonate auto sampler (on hold) would be bought this year, if

funds permitted. The seismic workstation was on hold. The auto titration system and LAS data handling were under review.

Austin noted that many of those items were in the panels' wish list. He asked whether PCOM wanted to take further action. Pyle said that requests for purchases tended to dribble in. He had, therefore, asked PCOM to coordinate requests. If PCOM did not act, it would be saying, in effect, that it did not wish to purchase anything. PCOM should be sure that there was nothing on the wish list that was needed for upcoming legs. Austin replied that the perception was that no money was available, but acknowledged that Pyle was right. Taylor stated that everything on the wish list was a priority to have made it that far. Berger suggested purchasing everything that cost <$10,000. Austin stressed that the list was a guide to JOI, Inc. Pyle said that, therefore, PCOM should endorse it. Austin replied that PCOM had already endorsed the top priorities and asked whether PCOM wanted to do more. Kidd supported Berger's plan. Austin suggested that PCOM endorse the wish list, enabling JOI, Inc. to purchase as resources became available. Gibson asked whether PCOM was happy with how the list was arrived at. SMP had responsibility for advising on purchases, then the ball was thrown to all panels, which voted. Austin added that K. Moran (SMP Chair) had worked with S. Humphris (LITHP Chair) on the short list. He was happy with how it was done. PCOM passed the following motion.

PCOM Motion

PCOM commends the panels for prioritizing their needs regarding non-engineering items and recommends to JOI, Inc. to take appropriate action contingent upon availability of funds. As some of the items require but modest investment it is anticipated that corresponding needs can be met in a timely manner.

Motion Berger, second Malpas Vote: for 16; against 0; abstain 0; absent 1

948. Thematic Rankings of Programs

LITHP

Malpas reported that LITHP identified 27 proposals addressing LITHP themes and introduced three new themes not addressed by proposals (lithosphere characterization, LIPs and the Red Sea [young oceans]). LITHP decided to rank the top 15 proposals. Proponents were present for information only. Each proposal was presented by a reviewer and ranking was by written votes. The top five of LITHP's ranking were: 1) Hole 504B, 2) HD II, 3) MARK, 4) TAG, and 5) Hole 735B and SR II (see also Agenda Book, blue page 22). Hole 504B was by far the highest-ranked proposal. Drillability was also assessed. A return to HD would depend on success of Leg 147. There was also a significant break in priority between ranks 4 and 5.

EPR II fell from 4 to 7 and NARM volcanic II fell from 4 to 12 relative to 1991 global rankings. LITHP had changed its philosophy and EPR II had been supplanted by offset drilling. Galapagos rose, partly because it was a potential DCS test location and partly because of some eloquent support by a panel member.

Discussion

Taylor noted that the top-ranked subset focussed on ridge processes and hydrothermalism. Austin stressed that that was partly a consequence of proposals available. Malpas added that LITHP had recognized that some themes were not addressed by proposals and had also added three new themes. Taylor wondered, therefore, how useful the ranking would be for developing the four-year ship schedule. Becker pointed out that LITHP's ranking was consistent with past rankings, with the addition of offset drilling. Taylor felt that LITHP also had other themes. Austin noted that LITHP had, in the past, had regional panels to direct it toward certain proposals. Austin stated that, at some point, PCOM would have to decide whether to schedule SR II based on an old DPG report. Someone would have to be found to prepare a new document. The panels generally recognized that, however.

OHP

Duncan explained that OHP had considered 14 proposals. Voting had been conducted in a similar way to LITHP's. Proponents had been present, but for information only, and were not allowed to vote on their own proposals. Voting scores were normalized. OHP also assessed drillability. The top three were: 1) Ceara Rise, 2) NAAG II (including possible additions), and 3) K/T boundary (two proposals). (See Agenda Book, blue page 22, for remainder of ranking.) OHP recommended formation of a Caribbean DPG; OHP expected more Caribbean proposals. Austin reminded PCOM that the purpose of drillability assessment was to enable SSP to contact proponents to encourage them to submit data, in a timely fashion, to the Site Survey Data Bank at LDGO..

Discussion

Cita-Sironi asked why Santa Barbara Basin (SBB) had not been ranked. Duncan replied that the site would be included in the California Current proposal if it was not drilled on Leg 146 or Leg 147. Kidd, however, pointed out that SBB was not in the California Current proposal that SSP received. Cita-Sironi observed that OHP had not ranked any Mediterranean proposals. She asked why it had not ranked Mediterranean sapropels (391), which fell within three of OHP's four themes (Note: Cita Sironi is a proponent). Duncan answered that OHP had felt that that proposal was too immature. Blum stated that the OHP liaison to SGPP had said that OHP did not give Mediterranean sapropels full attention. Austin said that that was because OHP was not very interested in the proposal. Austin noted that some panels had decided to rank concepts, but that others had not. It was up to individual panels. Taylor asked how ready for drilling Benguela Current (354-Rev) was. Kidd responded that the panels had considered readiness and SSP had seen available data. Some proposals were unlikely to have data submitted by August. Benguela Current was one of those. Taylor said that he had asked because Benguela Current was located on one path out of the Atlantic. Austin reminded PCOM that it would have to decide on content of the FY94 prospectus in August.

SGPP

Cita-Sironi reported that new proposals had been presented by watchdogs. SGPP reduced a list of 44 to 25, on which SGPP voted, and flagged those drillable in FY94. Proponents left the room during discussion.

Blum explained that a straw vote had been taken and the list reduced to 16 by consensus. SGPP had re-voted on those 16. Blum felt that SGPP's procedure had been good. Votes were almost identical to those in the straw vote, adding to the level of confidence. SGPP was a heterogeneous panel, with both sedimentary- and geochemistry-oriented membership. Such consistency in ranking as was achieved by LITHP and OHP should not, therefore, be expected. The top five rankings were: 1) Generic gas hydrates, 2) N. Barbados Ridge, 3) Amazon fan, 4) Mediterranean Sapropels, and 5) Madeira Abyssal Plain/sediment instability (see also Agenda Book, blue page 22). Below the top rank, rankings differed from 1991 global rankings. Cita-Sironi added that another reason for inconsistency had been that a number of new proposals had been received. Most had been from the Atlantic and adjacent seas.

Discussion

Austin recalled that PCOM had left it up to Panel Chairs as to how to deal with proponents during ranking. Only SGPP had kept proponents out of the room. In reply to a question from Berger, Blum said that excluding proponents had not influenced ranking consistency. Austin added that new proposals had been the main cause of 1991 to 1992 inconsistency.

TECP

Tucholke stated that proponents had remained in the room during TECP's discussion, but for information only. Each panel member had been allowed to vote for ten proposals (not to include their own). The top six were: 1) NARM non-volcanic II (Newfoundland Basin), 2) African Equatorial Transect, 3) NARM volcanic II, 4) Alboran Sea (combined proposals), 5) Woodlark Basin, and 6) Hole 504B (see also Agenda Book, blue page 22).

949. Setting the General Direction of the Drilling Vessel to Spring 1996

Austin explained that PCOM had heard the panels' global rankings and the engineering discussion and must now put together a general motion to cover the four-year ship track. The FY93 schedule was fixed, FY94 was less fixed, FY95 and FY96 were flexible. He compared the FY91 and FY92 global ranking maps, on display at the meeting, which showed that the highest-ranked proposals were tending to become centered on the Atlantic. In the past, it had been assumed that the drillship would travel around the world and regional panels had existed. There were worrying implications of the present Atlantic focus. Austin then called for discussion.

Malpas felt that it was nice to see a focus, though it was worrying if the perception was that drilling would only be carried out in the North Atlantic and eastern Pacific. PCOM should recognize the development of a focus, which might be a consequence of the 1991 four-year ship track, and call for proposals elsewhere, e.g., Red Sea. It should be stressed that ODP was still a global program, but also that proposals must be thematic. Taylor felt that outlying (i.e., non-Atlantic) proposals that remained were there because they represented top panel priorities. Lower-ranked outlying proposals had fallen off. In addition, PCOM had drawn the line at rank 6 for the FY93 prospectus. That had sent a signal to thematic panels that if a panel wants a proposal in the FY94 prospectus, it must be in the top 6 of its global ranking. Austin agreed that thematic panels did respond to the four-year ship track. They knew where *JOIDES Resolution* was going to be and were, therefore, reluctant to rank globally and waste a rank. Ranking of generic proposals, e.g., gas hydrates, addressed the issue to some extent. Malpas

expressed concern about the lack of proposals in the Southern Ocean and Indian Ocean, noting that there had been time to consider the last round of results. Austin said that PCOM must recognize that if it pointed the drillship in a particular direction, highly-ranked proposals would appear there. Lewis, therefore, questioned the need for a four-year ship track. Austin replied that it was required because lead time was needed to get site surveys organized.

Tucholke felt that PCOM should examine its general philosophy concerning the four-year ship track. PCOM had discussed making a commitment to deep holes and a focus was needed. It was not necessarily good to keep pushing around the world. Malpas agreed. He suggested that PCOM specify the Indian Ocean for the fourth year and see what proposals were received. There might be none. Beiersdorf pointed out that site surveys had absorbed the time of many investigators. He expected proposals from other areas to come in soon. Austin stated that commitment to long-range programs required a lot of supporting data and there was a lot of data from the Atlantic. There was also pent-up demand for Atlantic drilling because *JOIDES Resolution* had just completed its ~7-year circumnavigation.

Tucholke suggested asking thematic panels to make two lists: a theme ranking list and a proposal ranking list. Blum responded that, in effect, that was already happening. SGPP had been instructed that it could include generic proposals in its global ranking without restricting its fall ranking. Blum added that SGPP and TECP ended up ranking proposals which had already been highly ranked by other thematic panels. TECP looked at proposals which did not have tectonic themes as main objectives. Lancelot supported Tucholke. Panels should conduct a primary ranking of themes, then rank proposals. If some themes were not covered by proposals, the thematic panels could write proposals or issue RFPs. Austin commented that there would still be a lag time. Lancelot responded that it would, however, tell PCOM that some themes could be developed where the ship happened to be located. Malpas observed that thematic panels had ranked themes when they wrote their White Papers. Taylor pointed out that thematic panels might ask PCOM to rank themes. Austin noted that STRATCOM had suggested that PCOM be more proactive. He was not averse to having PCOM rank themes. Perhaps it would be best for thematic panels to continue to produce a single global ranking list. Austin was still concerned about Atlantic focus. Tucholke stressed that that was why themes should be ranked. Then, if proposals in the direction PCOM was driving the drillship did not address panel themes, PCOM should drive the drillship in a different direction. Berger felt that themes would change. Lancelot responded that they could be reevaluated each year. Malpas felt that another year would make a difference to the distribution of globally-ranked proposals. There was a finite number of drilling targets in the North Atlantic. Austin, however, stressed that PCOM was committing itself to a potentially four-year NARM program and a many-leg offset drilling program in the Atlantic.

Watkins recalled that there had been no Atlantic proposals three years ago and PCOM had walked away from some good Pacific proposals. He felt PCOM was stuck with the Atlantic for now. Arculus stated that, because of that, there was a relaxed attitude among proponents in other regions. Austin feared that, unless the rest of the scientific community was given some help, it might not be able to overcome the bigger Atlantic community. Taylor commented that PCOM got little information about surveys carried out by international partner countries (analogous to the information that was given as part of the NSF report). That could be a good long-term indication of where international interests lay. Austin agreed that it would be useful for international PCOM members to bring such information to future PCOM meetings. Lancelot announced that France was sending *R/V Atalante* across the Atlantic for a year. Taylor, however, added that *Atalante* would be in the westernPacific in 1993.

Malpas felt that there was nothing wrong with what was happening, or spending four years in the Atlantic to tackle top programs. Meanwhile, thematic panels should be asked to tell PCOM the best places to tackle particular themes. He did not think it worth worrying about drillship circumnavigation. Austin said he would have thematic panels do that at their fall meetings. The message to site-survey funding agencies was that ODP had an Atlantic focus for the time being.

Austin showed a sample motion outlining the four-year ship track (Agenda Book, blue pages 23-24). Watkins suggested including the Red Sea along with the Mediterranean. Austin asked whether *JOIDES Resolution* could pass through the Suez Canal. Francis was not sure, but Lancelot said that it could. Austin agreed, in that case, to include the Red Sea. Malpas suggested simply extending item 3 in the sample motion to cover the period up to April 1996. Duncan proposed adding the Indian Ocean. Austin said that the southwest Indian Ocean could be added. He commented that, if the 1993 global ranking map showed an even tighter focus on the Atlantic than in 1992, PCOM might have to reconsider its procedures in light of the interests of Japanese and Australian partners. Highly-ranked proposals were needed. Malpas suggested that, rather than for PCOM to take action, thematic panels should put out RFPs for other areas (e.g., LITHP's Red Sea initiative). Austin said that he would write to Panel Chairs and summarize PCOM's discussion. He would ask them, at their next meeting, to look hard at their themes, priotitize them, and give PCOM some examples of where they would like to see those themes pursued. Taylor pointed out that, though North Atlantic rifted margins were made the focus of a DPG, TECP had never been asked where the best place was to drill rifted margins globally. Austin said that TECP had been asked. Taylor recalled that TECP had listed several places. It might not be desirable to spend an eight-leg commitment entirely in the North Atlantic. Austin responded that the NARM program would be reevaluated after the FY93 initial approach. It was not certain that eight legs would be scheduled, as originally proposed by NARM-DPG. PCOM passed the following motion.

PCOM Motion

PCOM sets the direction of the drilling vessel for the next four years as follows:

1) In the remainder of FY92, confirmed as is in the current Program Plan.

2) In FY93, and beyond to November 1993, confirmed as is in the Program Plan approved at its December 1991 meeting in Austin, Texas, through Leg 152, East Greenland Margin, ending on or about 28 November 1993.

3) In the remainder of FY94 through April 1996, in the Atlantic Ocean and adjacent seas* and the eastern Pacific. FY94 program to be finalized in December 1992 at the Annual Meeting of PCOM with Panel Chairs.

PCOM reaffirms its stand that at its Spring 1993 meeting, and at subsequent meetings, it will evaluate again the state of panel recommendations, technological developments, and the overall state of ODP, and again set the general direction of the drilling vessel for the subsequent four years, with a relatively firm early track and a relatively flexible later direction.

*** Defined as Caribbean, Gulf of Mexico, Mediterranean, Norwegian (including near-Arctic Ocean), Labrador, Red Sea.**

Motion Tucholke, second Duncan Vote: for 16; against 0; abstain 0; absent 1

950. New Detailed Planning Groups and Working Groups

Austin noted that OHP had recommended a Caribbean DPG and a NAAG II-DPG, the latter not to meet until 1993. Austin felt that, at present, there were insufficient Caribbean proposals and that those existing were not highly-ranked enough. His inclination was to allow proponents to work on them for a while. SL-WG and OD-WG would meet once more each. DH-WG (steering committee) would exist for about two more years. Austin reminded PCOM that it should avoid an excessive number of DPGs and WGs.

Taylor raised the issue of the importance of NAAG II versus SR II. He asked whether SR II had stopped because it lacked a DPG. Duncan responded that OHP felt that a NAAG II-DPG was needed because it was uncertain whether NAAG I would be able to reach the northernmost high-priority sites, and also because there were some new NAAG proposals. That was not the case for SR II. Taylor felt that there was no need for a NAAG II-DPG. Austin agreed that it was premature. The new proposals would first have to be highly ranked. NAAG I (Leg 151) would start with the northernmost sites and work south. He agreed that a NAAG II-DPG was not needed yet.

Malpas asked about a TAG-DPG. Austin replied that LITHP still felt TAG to be in the hands of proponents. A site-survey proposal had been turned down. A TAG-DPG had been rejected by PCOM in December 1991. Kidd stated that there was a lot of TAG data, but that nobody was synthesizing it. Beiersdorf noted that the Briden Report had recommended that thematic panels be more proactive. Austin responded that thematic panels were nominating watchdogs to contact proponents. PCOM had also told thematic panels that they could solicit proponents to write proposals or write proposals themselves if they had a theme that was not covered. Taylor proposed that no new DPGs or WGs be created. Austin concurred; there was no dissent.

951. Old Business; Continuing Issues

Santa Barbara Basin (SBB) Drilling

Austin recalled that OHP wanted to drill SBB on Leg 147 (they had said Leg 148, but that was not logistically possible). N. Shackleton, then OHP Chair, had raised the issue of Supplemental Science in 1991 using SBB as a basis. A SBB proposal did not, however, appear at that time. The single site now proposed was part of the California Current proposal (386-Rev). PCOM must respond to OHP. Austin stated that when PCOM ended Supplemental Science it endorsed less-than-one-leg science, if it could be incorporated into a leg early in planning. Austin felt that it was now too late to incorporate SBB into Leg 147.

In response to a question from Malpas, Francis said that the Leg 146 prospectus had been written and the Leg 147 prospectus would be written soon. Austin suggested that PCOM discuss what constituted an early stage of planning. In response to a further question from Malpas, Francis said that drilling SBB on Leg 147 would require 1.5 days plus 1 day of transit. No transit time would be required if SBB was drilled on Leg 146. Austin objected, saying that the Leg 146 prospectus had already been written and that Leg 146 had already been impacted by the need to replace a CORK thermistor string. Lancelot pointed out that SBB had not been ranked as a separate proposal, although it could have been during global rankings. OHP should have taken a stand and made SBB its first priority objective.

Malpas asked about staffing implications. Austin replied that J. Kennett, SBB proponent, was ready to fund a launch to take staff out to *JOIDES Resolution.* SBB would be an APC site on a RCB leg. Taylor suggested that PCOM turn down SBB. *JOIDES Resolution* would be back in that area and the site was incorporated within the California Current proposal. Berger, however, argued in favor of SBB. PCOM should not get bogged down with procedures, but must decide whether SBB was worth drilling. He suggested that most on PCOM believed that "a short core of diorite is better than a whole truck load of stinking mud." There was a large community, however, that felt that SBB represented a unique opportunity. SBB would provide foreknowledge for future California Current drilling. SBB was highly-ranked by OHP and SGPP and the atmospheric community was interested. There was a potential for good headlines. It would only require ~20 hours, including 3 hours steaming and ~16 hours drilling. Francis pointed out that that implied conducting SBB operations on Leg 146. Berger wanted to defer consideration of specific legs. Austin, however, stressed that PCOM had to consider those specifics now. Berger suggested that Leg 146 could shut down 10 hours early and Leg 147 could start 10 hours late. Austin felt that that would set a bad precedent because there could be demands to insert that sort of "hot item" into every cruise. Where would PCOM draw the line about putting late items into the schedule? Watkins felt that SBB was a good program.

Becker took exception to OHP's opinion that two days would not affect the scheduled leg. Austin cautioned that SBB would probably not take 20 hours, but longer.To involve only 3 hours transit time, SBB would have to be drilled on Leg 146 and that prospectus was already written. If PCOM put SBB on Leg 147, transit time would be >20 hours. SBB also involved possible safety problems. Kidd felt that SBB would have to be on Leg 147, not Leg 146. He added that SBB's site survey data were in as good shape as HD's. Malpas asked how long SBB drilling would take. Leg 147 had two objectives: a long section of gabbro and the gabbro/mantle transition. Three days could be critical to Leg 147 if it missed the transition as a result. Austin replied that the transit from San Diego to SBB was 8-12 hours. With extra transit time back to the south on the way to HD, the total additional transit time would be ~1 day. Berger suggested simply coming in from Leg 146 a day late. Francis stressed that the schedule was locked in down the line by the Leg 151 (NAAG I) weather window.

Austin returned to the issue of philosophy. Was SBB too late or still early enough for incorporation of less-than-one-leg science? Malpas felt that it was too late when Co-Chiefs had been chosen and the leg basically staffed. It was not too late if the leg had only been scheduled. Taylor suggested that the issue be discussed at the Annual Meeting. Duncan emphasized that OHP saw an opportunity when Hole 504B was replacing an engineering leg. OHP proposed making Leg 147 Hole 504B and Leg 148 HD. Austin stated that that could not be done. Scientific Parties had set their schedules and could not be expected to make a 2-month change. Lancelot agreed that that was out of the question, but added that PCOM should be looking for opportunities. Precedent alone was not a serious problem. PCOM had to react to opportunity and should not go on record as saying that was impossible. Austin, however, expressed concern that SBB would have to be put on Leg 146 for efficiency and staffing and that leg was already overcommitted. Taylor pointed out that SBB science had been around for years and could have been drilled on Leg 138 if the proposal had been submitted. He was not sympathetic. Austin added that SBB would be ranked highly in the future by OHP as part of the California Current proposal. Lancelot countered that, if the SBB proposal had come in earlier, PCOM would have found time on Leg 146.

Berger felt that it would set a bad precedent in the community if SBB was not scheduled. He suggested lengthening Leg 146 and shortening later leg(s). Lancelot wondered whether SBB could be accomplished simply by lengthening Leg 146 and shortening the subsequent port call, which had the advantage of being in San Diego. Francis replied that it was impossible to

predict how smoothly the port call might go. Lancelot favored including SBB in Leg 146 and lengthening the leg by 1 day. SBB was high-priority science. PCOM had been vague to the thematic panels about restrictions on inclusion of less-than-one-leg science and should set a clear policy as to timing. The extra day could be taken out of Leg 148. Austin agreed that that solved part of the problem, since Leg 148 Co-Chiefs had not yet been chosen and it would avoid impacting the critical Leg 151 weather window. He stated that he was in favor of that scenario, as long as PCOM was specific about how this issue would be dealt with in future. Beiersdorf asked how the California Current proposal would be dealt with. Austin said that SBB proponents had excerpted SBB from California Current. He was concerned about safety. Kidd noted that SBB was of interest to both OHP and SGPP, but that SGPP would not push California Current as strongly.

Lancelot felt that PCOM must give its reasons for including SBB, that it was only because of the unique opportunity, but should not establish precedents and guidelines. Austin noted, however, that OHP had other, similar items in the Atlantic. Lancelot thought that OHP would have been warned to prepare far in advance. Duncan agreed. OHP was very aware of future requirements. They saw a special opportunity here related to the change to Leg 148 from engineering to Hole 504B. Austin was concerned about pleasing OHP at the expense of LITHP, adding that superposition favored OHP. Duncan noted that OHP had favored Leg 145 basement drilling. Fox felt that the proposed solution was good, but asked whether the time estimate of 20 hours was reliable. Austin, in addition, raised the issue of who would work the SBB cores, who would pay post-cruise money, and what would Leg 146 Co-Chief responsibilities be? Berger suggested that inclusion of SBB be looked upon as a medical emergency. Lancelot proposed allowing SBB 24 hours only, with no possibility of extra time. Kidd suggested that the work be done by the Leg 146 Scientific Party; there would be no SBB proponent aboard. Francis was reluctant to add a day to Leg 146. He had consistently argued to shorten legs. Lengthening legs was bad for morale. ODP's health also depended on technicians. Becker recalled that 5 days of paleoceanographic work had been incorporated in Leg 111; it could be handled. Taylor noted that if a day was added to Leg 146 and subtracted from Leg 148, it would affect the same crew. Austin said that PCOM was sensitive to problems of leg length, but that only one day was involved. Francis stated that Leg 146 was a very busy leg. Austin agreed and felt that the Leg 146 Co-Chiefs would not understand why PCOM would not give them, rather than SBB, an extra day.

Austin feared that the issue of what constituted an early stage in leg planning (i.e., for the inclusion of less-than-one-leg science) would be a continuing issue at every PCOM meeting. Lancelot disagreed. He felt, however, that there would be cases where PCOM would have to take advantage of opportunities. Taylor did not dispute that, but reiterated that SBB science had been around for 3 years. Austin commented that he had never understood why the SBB proposal had not been submitted earlier. Beiersdorf added that SBB did not rank very highly. Austin responded that OHP had made a tactical error. OHP should have ranked SBB higher, but that he could not blame OHP for that. Francis pointed out that *JOIDES Resolution* would sail on Leg 146 before safety approval had been obtained for SBB. Austin responded that Kidd would have to contact Kennett for data. Kidd stated that he had asked M. Ball, PPSP Chair, to look at SBB safety early. Austin did not think that there would be a problem with safety review procedures in this case.

Malpas asked what controls existed on the 24 hour time period. Austin replied that the Co-Chiefs would have ultimate control. SBB proponents would get what they could get in 24 hours. Storms remarked that the pre-cruise meeting for Leg 146 had just been held and had involved some severe cutting of days. The Leg 146 Co-Chiefs would be irate over inclusion of SBB. Austin acknowledged that they already had complaints (e.g., thermistor string

replacement at Hole 857D, GEOPROPS testing). He felt that Leg 146 might have been given too much to do by being required by CA-DPG to drill at two locations (Vancouver Island and Oregon Margin).

Tucholke read a draft motion on SBB drilling. Fox stressed that PCOM should enforce the limit of 24 hours, and only 24 hours, on SBB drilling. Austin replied that the Leg 146 Co-Chiefs would do that. Duncan cautioned about being too inflexible about requiring similar requests to be submitted at least one year pre-cruise. Kidd suggested that PCOM should make the point that the return to Hole 504B had provided flexibility in the schedule that would not be there in future. Austin did not, however, wish to link the decision to drill SBB to Hole 504B. Taylor noted that SBB was not logistically convenient to Leg 146. Austin said that he would explain that to the Leg 146 Co-Chiefs. In response to a question from Kidd, Francis said that if SBB failed its safety review, Leg 146 would keep the extra day. Austin agreed. PCOM passed the following motion.

PCOM Motion

PCOM views the Santa Barbara Basin site as an exceptional scientific opportunity to obtain an important climate record at a logistically-convenient time. PCOM, therefore, approves the addition of a total of 24 hours to Leg 146 to allow drilling of this site at the end of this leg, contingent upon passing safety review. To maintain the schedule of subsequent Atlantic drilling, which is weather-dependent, Leg 148 will be shortened by 24 hours. PCOM nevertheless expresses strong concern about the lateness of the OHP request to drill this site and notes that, in the future, such requests normally will not be considered later than one year pre-cruise.

Motion Tucholke, second Lancelot Vote: for 12; against 4; abstain 0; absent 1

LEG 148 (HOLE 504B)

Austin noted that PCOM had already decided that Leg 148 would be Hole 504B. The decision to add an extra day to Leg 146 meant that Leg 148 would have 39 days on site instead of 40.

LEG 149 (NARM NON-VOLCANIC I)

Austin informed PCOM that Taylor wished to express concerns about the ordering of sites on Leg 149.

Taylor stated that he had become concerned about Leg 149 science following the 1991 Annual Meeting. Leg 149 was built around locating the continent-ocean boundary (COB). Taylor argued that that was a fallacious concept and that chances of accomplishing that goal were small. He felt that the real questions involved the nature of the transition zone and differences between high-standing Flemish Cap and Galicia Bank and the stretched zones. Taylor drew an analogy between the early rifting history of the North Atlantic and the Afar region. He asked where drilling sites should be located in Afar to find COB. Results of drilling there would be alternating continental and oceanic rocks from successive sites because the settings were mixed. Furthermore, all three planned drill sites on Leg 149 at Iberian Abyssal Plain (IAP) were on basement highs. Only late post-rift sediments would be drilled. Drilling of three basement highs would not help define the COB. The syn-rift history must be known in order to

determine how IAP evolved into its present configuration. In addition, the paleoceanographc community was interested in Aptian/Albian black shales. Taylor proposed, therefore, that Leg 149 focus on a single deep site, IAP-1, in ~5200 m water depth and with ~2500 m penetration. Drilling could be accomplished in a single leg. There was no need to wait an extra year before attempting a deep site (i.e., in Newfoundland Basin on NARM non-volcanic II). IAP-1 was estimated to require about the time available on Leg 149, whereas it might not be possible to drill the presently scheduled three sites in a single leg.

Lancelot stated that his perception of the plan for Leg 149 had been different from that presently scheduled. He had felt that IAP-3B ranked as a contingency with respect to GAL-1, based on a letter from H.-C. Larsen to G. Boillot before the 1991 Annual PCOM Meeting. Based on that, some seismic processing had been done in France related to GAL-1. Lancelot, therefore, felt that the choice should be between Taylor's scenario and GAL-1. Taylor responded that PCOM had discussed GAL-1 and that the problem was that the S-reflector was ambiguous there. Lancelot, however, believed that new data documented continuity of the S-reflector to GAL-1. The thickness of the (post-S-reflector) "enigmatic terrane" had been mapped and there was continuity. Both the enigmatic terrane and S-reflector could be drilled at GAL-1. Taylor noted that the problem was that the S-reflector was defined elsewhere as an intra-basement reflector. Further west, the enigmatic terrane occured and the candidate S-reflector was no longer intra-basement. Drilling would not get at the postulated intra-basement detachment (S-reflector).

Austin asked whether PCOM wanted to go back on its endorsement of NARM-DPG's strategy, by changing the ordering of sites. PCOM had discussed the issue in December 1991 and ODP-TAMU had not wanted to drill the deep hole (IAP-1) first. Watkins supported IAP-1, but expressed concern about second-guessing NARM-DPG. Kidd asked whether NARM-DPG's response had been based on ODP-TAMU's reluctance to attempt deep drilling on NARM non-volcanic I. Tucholke replied that he had not been at the final NARM-DPG meeting, but that he believed that NARM-DPG's decision to drill IAP-1 late was a response to ODP-TAMU's concern. He added that, as a proponent of NARM drilling, he was in an awkward position, but felt that Taylor had made a valid point. Kidd recalled that the Atlantic Regional Panel had wanted to drill deep holes first. Austin, noting that he was also a NARM proponent, stated that there was a need to drill deep. Duncan felt that Taylor had called into question the scientific rationale for drilling highs and questioned whether sites on highs should even follow IAP-1, if that was drilled first. Austin commented that it would always be difficult to know whether crust was continental or oceanic based on a 9" hole. Lewis asked for confirmation that NARM-DPG had wanted to drill the deep hole first, but that ODP-TAMU's objections had influenced it to delay deep drilling. Francis said that ODP-TAMU had updated drilling time estimates for IAP-1 in January: 53.8 days plus 4 contingency days, exclusive of logging. Austin asked whether ODP-TAMU was comfortable with drilling IAP-1. Francis answered that it could be done, but questioned how long it would take. Austin acknowledged that, with 2500 m penetration, a single leg might not reach basement. Storms explained that ODP-TAMU's analysis since the December 1991 PCOM meeting was that IAP-1 could be drilled with existing equipment in 50-60 days. That included 16" casing to 800 m. This was deeper and larger-diameter casing than usual. It would allow casing to still greater depths if problems were encountered.

Fox noted that a commitment of ODP was to solve first-order scientific problems. If IAP-1 was the key hole, it did not matter if it took more than a single leg. *JOIDES Resolution* would be in the Atlantic for some time. He added that basement highs had been drilled before. Lewis agreed, but felt that it might be necessary to ask proponents if IAP-1 was the site they would choose if drilling technology was not a problem. Austin responded that PCOM already had

NARM-DPG's report. They had wanted to drill IAP-1, but had been cautious about engineering considerations. Lancelot felt that IAP-1 was needed. Little would be learned from the shallow sites. The transect could be drilled later. Austin agreed that the transect of shallower sites remained and would need to be drilled later. In addition, TECP wanted to get started on deep drilling. PCOM was not changing its endorsement of NARM-DPG, just the order of sites. PCOM passed the following motion.

PCOM Motion

PCOM moves that the primary objective of Leg 149 be a deep hole at Site IAP-1.

Motion Taylor, second Malpas Vote: for 13; against 0; abstain 3; absent 1

LEG 150 (NJ/MAT)

Austin explained that the Leg 150 Co-Chiefs had requested PCOM endorsement of a plan to treat cores from their proposed land-drilling on the New Jersey Coastal Plain as Leg 150 cores for archiving and sampling (Agenda Book, white page 399). Austin was in favor of the plan, so long as it was not viewed as setting a precedent.

Becker asked whether that would imply a commitment for USSAC to fund post-cruise work. Austin was not sure. Malfait stated that there would be no such commitment and that funding would be separate. Becker asked about publication. Austin responded that the Shipboard Party could work the land core and, since land drilling would take place before Leg 150, publication would not be delayed. Lewis asked whether there would be a problem with storage space at the East Coast Repository (ECR). Austin replied that space was a problem at ECR, but that that was not a consideration. Lancelot welcomed the proposition, characterizing it as "a freebie". Austin took it as a consensus that PCOM endorsed the plan, adding that it should help the land drilling to get funded.

PCOM Consensus

PCOM endorses the proposal by designated Leg 150 Co-Chiefs that core to be collected as part of a proposed land drilling effort extending the NJ/MAT transect be treated as one with Leg 150 cores.

Taylor noted that ODP-TAMU's revised drilling schedule took days away from Leg 150 and asked whether that would affect Leg 150 science. Austin replied that the old schedule had given NJ/MAT more days than its proponents had originally proposed.

Leg 151 (NAAG I)

Austin stated that OHP had requested that an icebreaker, not simply an ice-support ship, be available for Leg 151. That would cost more than was currently budgeted.

Lancelot was not sure that it need cost more. *R/V Astrolabe* or its sister ship were cheaper icebreakers, though less powerful than *Oden*, e.g., they would not be able to tow *JOIDES Resolution*. They were, however, research vessels and could take 35 m piston cores. Partial

French funding was possible. Austin explained that $1.1M had been budgeted for an ice-support vessel, but that BCOM had felt that that was too much and had asked that it be cut and the money used for other things. To reach the northernmost sites, however, it would be necessary to break ice. Taylor asked about the possibility of using a Russian vessel. Sharaskin replied that that might be possible. Russia was now looking for the cheapest and most appropriate vessel. Francis said that he had given Sharaskin Wadham's ice study. Sharaskin should provide ODP-TAMU with ship specifications. ODP-TAMU would also need *Astrolabe's* specifications. Lancelot replied that *Astrolabe* could break 2 m-thick ice. Francis pointed out that it would also be necessary to convince SEDCO-FOREX about the advisability of entering ice. In response to Taylor, Francis stated that insurance had been discussed. Austin felt that PCOM should not go on record as stating that the Science Operator must get an icebreaker. The ship chosen would be needed, as an ice-support vessel, for the whole leg. Berger suggested *Polarstern*. Beiersdorf noted that *Polarstern* could not tow *JOIDES Resolution*. Francis stated that *Polarstern* would be in the vicinity, but was fully committed. More than an ability to tow *JOIDES Resolution* was needed. It was necessary to maintain clear water around *JOIDES Resolution* so that it could use dynamic positioning (DP). Otherwise, drilling in DP mode would probably be impossible if the ice cover was >50%.

Taylor raised the philosophical issue that the important scientific results were to be achieved at the northernmost sites. That might not happen until NAAG II, but PCOM would have to think about how to accommodate that science during the next four years. Without *Oden*, the primary sites would be undrillable. If that was not to be done now, PCOM would have to think about how to guarantee that ARC-2A would be drilled on NAAG II. Austin countered that, if it cost an extra $500,000 to drill a site, PCOM would have to consider whether it was worth it. Lancelot noted that ice conditions varied from year to year. He felt that the *Oden* deal was risky. If it turned out to be a bad ice year, NAAG I would have to be ready to drill fall-back sites. Taylor, however, felt that if PCOM did not provide the best icebreaker possible, NAAG goals would never be achieved.

Austin stressed the importance of balancing costs. Something else would be lost if too much was spent on NAAG. BCOM thought that $1.1M was too much and wanted a reduction of ~$500,000. The savings could go to DCS, DataNet, etc. Francis commented that the cheapest ice-support vessel to fulfill safety requirements would cost <$1.1M, whereas *Oden* would cost $1.8M. Lancelot felt that the proponents were not comfortable with using *Oden* on NAAG I. They were ready to attempt NAAG I drilling and hope for good ice conditions. They did not expect an all-out effort until NADP began in earnest. Austin felt that it was important to gain experience with NAAG I before committing to costly decisions. Storms, however, noted that the ice situation varied and it would be good to have an icebreaker ready if this was a good year. Austin agreed, but added that *Oden* would not be sitting at the dock waiting for the call. Storms stressed that drilling of the northernmost sites would broaden the support base of ODP. Funds from other sources might be attracted; it would be cheaper than a new program. Austin said that remained hypothetical and asked whether PCOM should commit to an icebreaker. Lewis felt that budgetary uncertainty forced PCOM's hand. If an icebreaker capable of the task could be obtained within the available budget, it should be used. Otherwise, it would have to be omitted. Austin stated that the minutes would reflect that as PCOM's decision. Francis added that enough time remained to discuss the matter again in August.

952. Membership on JOIDES Panels

PCOM reviewed membership on various JOIDES panels and took the following actions. (CVs of most newly-nominated members are available at the JOIDES Office.)

DMP

DMP wanted to replace R. Wilkins with a "seismically numerate" member, but P. Worthington (DMP Chair) had not yet forwarded recommendations. Becker nominated G. Fryer. Austin noted that Worthington was no longer with BP and was grooming a replacement Chair. Fox added that Worthington would step down as Chair after the fall meeting and stay on DMP for one more year.

PPSP

No action required.

SMP

R. Whitmarsh was to be replaced by R. Brereton (BGS, UK). SMP would like a sedimentologist to replace A. Richards (ESF). Cita-Sironi asked whether SMP needed a petrologist. Austin replied that SMP had not done so, but that ESF could nominate whoever it chose. PCOM could return to the issue of SMP's membership. SMP was relatively under-staffed, but K. Moran (Chair) had no objections.

IHP

I. Gibson (Chair) was not the C-A representative. That had been N. Rock. Malpas said that a new C-A representative would be appointed in mid-May.

SSP

R. Kidd (Chair) would be rotating off SSP and onto PCOM. G. Mountain had declined to be Chair because of Leg 150 responsibilities. In December 1991, PCOM had not minded there being two members from LDGO, because K. Kastens had been rotating off. Now, however, Kastens had been proposed as Chair, which raised the issue again, though Austin felt that Kastens would be a good Chair.

Taylor recalled that Mountain had been put on SSP to be Chair. He noted that Mountain and Kastens had very different expertise and, since SSP was a service panel, he proposed allowing both to remain. Taylor added that he would take exception to that on a thematic panel. Austin stated that PCOM must add the caveat that it still frowned on multiple panel members from a single institution. Kidd stressed that service panels differed from thematic panels: expertise and the amount of work members did were important. Austin asked whether PCOM was concerned about the precedent. No objections were raised.

International partner PCOM representatives announced that K. Louden (C-A), B. Larsen (ESF) and G. Pautot (France) would be replaced in May. Kidd noted that Pautot had not attended a meeting in three years. Austin asked whether Kidd had profiles of expertise for replacements. Kidd replied that SSP would like a high-resolution seismics person to replace Larsen. Lancelot said that he would look for a French representative with that expertise. Kidd agreed with Lancelot's plan. He announced that his own replacement would be M. Sinha, whose expertise

was in deep-towed seismics. SSP would discuss expertise to be required of Louden's replacement.

TEDCOM

No action required.

OHP

International partner PCOM representatives announced that P. Davies (C-A), E. Jansen (ESF) and E. Vincent (France) would be replaced. Malpas announced that T. Loutit (EXXON) would be moving to Australia (BMR). Duncan stressed that Loutit was important for his seismic stratigraphic expertise. Lancelot stated that M.-P. Aubry would probably replace Vincent.

SGPP

Lancelot stated that J. Boulègue (France) would be replaced later in 1992.

LITHP

J. Phipps-Morgan and G. Smith had rotated and S. Cloetingh (ESF) and J. Franklin (C-A) would be replaced. Nominees to replace Phipps-Morgan were: D. Wilson (UCSB), D. Forsyth (Brown) and R. Buck (LDGO). Those to replace Smith were: J. Tarduno (SIO), R. Karlin (Nevada, Reno), B. Clement (Florida International) and P. Rochette (France). Nominees to provide augmentation in LIPs expertise were M. Coffin (UTIG), J. Mahoney (Hawaii) and R. White (UK).

Taylor nominated J. Mahoney (already a nominee) and J. Karstens, both of Hawaii. He expressed the opinion that there was a need for more Hawaii people on thematic panels in the long term.

PCOM accepted the nominations of Wilson, Tarduno and Coffin.

TECP

D. Sawyer and G.M. Purdy had rotated off. TECP had provided nominations in three areas of expertise. Seismology: A. Tréhu (OSU, but already on SSP) and U. Ten Brink (USGS, Woods Hole); rifted margins: C. Beaumont (C-A), M. Steckler (LDGO), D. Hutchinson (USGS, Woods Hole), M. Coffin (UTIG); ocean crust/microstructure: S. Agar (Northwestern), J. Karstens (Hawaii). Lancelot stated that J. Bourgois would be replaced by either a rifted margins person or an ophiolite person. He asked which TECP would prefer. Tucholke responded that TECP's preference would be for additional rifted margins expertise.

PCOM accepted the nominations of Ten Brink, Beaumont and Agar.

PCOM Liaisons

Concernong panels meeting before the August PCOM meeting, Becker would attend TEDCOM and DMP. Becker had to attend all meetings related to pore fluid sampling. Austin would attend EXCOM and Taylor would attend OD-WG. Watkins would attend SSP and SL-WG, but would rotate off PCOM at the end of 1992.

Cita-Sironi and Tucholke were leaving PCOM. Taylor could attend future TECP meetings in place of Tucholke.

Duncan noted that he would leave PCOM at the end of 1992. His replacement would be A. Mix. Jenkyns would attend the next OHP. Mix would probably become OHP liaison.

Berger would probably become SGPP liaison with von Rad.

Lancelot stated that he could attend the next IHP meeting, but would probably rotate off at the end of 1992.

Malpas and Mutter would share LITHP.

Sharaskin would replace Lancelot as liaison to SSP after Lancelot had rotated off.

WATCHDOGS

Austin explained that watchdogs would be required to give presentations on proposals at the PCOM Annual Meeting and keep in touch with proponents, mostly through panels.

Berger would take over Mediterranean Sapropels from Cita-Sironi and also take on California Current. H.-C. Larsen would take on Alboran Basin and Mediterranean Ridge from D. Cowan. Watkins would retain his interest in sea-level proposals and Taylor would retain his in offset-drilling proposals. Taylor asked that someone take on HD as a separate item from the rest of offset drilling. It was decided that Taylor would be watchdog for Atlantic and Indian Ocean offset drilling proposals and Malpas would be watchdog for Pacific offset drilling proposals.

Von Rad would take on K/T boundary proposals. Duncan would take gas hydrates and Barbados. Malpas would continue on VICAP. Austin would take Benguela Current, since he would no longer be Chair at the 1992 Annual PCOM Meeting.

Kidd noted that nobody was compiling existing data on Vema. The watchdog (Taylor) should consider that. Taylor responded that Bonatti had a cruise organized and Taylor would see him soon.

CO-CHIEF SCIENTIST NOMINATIONS

Austin reminded PCOM that it nominated Co-Chiefs to ODP-TAMU (in order of priority, though names appeared in alphabetical order in PCOM minutes). The final responsibility for

Co-Chief selection lay with ODP-TAMU. ODP-TAMU did not inform nominees who were not chosen. Austin asked whether PCOM or ODP-TAMU should do so.

Lancelot felt that there should have been better communications in the case of Leg 149. G. Boillot had kept working on related projects, unaware until recently that he had not been selected. Taylor thought that it would be useful if ODP-TAMU told PCOM members when both Co-Chiefs had been selected. Francis was reluctant to communicate with nominees, but would tell PCOM. Lancelot agreed with that plan. Tucholke suggested keeping nominees confidential (excluding their names from PCOM minutes) to avoid the problem. Austin responded that that could be done. Langseth noted that some people contacted PCOM and asked to be put on the lists. Lancelot noted that proponents expected to be given priority. Quick communication would solve the problem, but confidentiality would not help because a grapevine existed. The lists should be open. Austin added that if nominees were not listed in the minutes, there would be no evidence about PCOM's wishes. Lancelot said that the Leg 149 situation had been a problem because a lot of time and money had been invested in leg-related work.

Austin stated that Co-Chief nominees would continue to appear in PCOM minutes in alphabetical order, with no order of preference implied. Francis added that he would inform PCOM members when selections had been made.

Leg 148, Hole 504B

US: J. Alt (Michigan)

International: J. Cann (UK), J. Honnorez (ESF), M. Salisbury (C-A)

Becker felt that a combination of a petrologist and a geophysicist were required in order to define the Layer 2/3 transition.

Leg 151, NAAG I

US: W. Ruddiman (Virginia), G. Brass (Miami)

International: E. Jansen (ESF), A Lisitsyn (Russia), J. Thiede (Germany)

Leg 152, NARM volcanic I

US: M. Coffin (UTIG)

International: B. Clark (C-A), O. Eldholm (ESF), H.-C. Larsen (ESF), C. Saemundsen (ESF), A. Saunders (UK), R. White (UK)

Duncan had been nominated, but withdrew because he was a PCOM member and was not a proponent. H.-C. Larsen would be coming onto PCOM, but since he was not involved in PCOM at the time of his nomination, PCOM judged that acceptable. Austin felt that an igneous petrologist would be useful.

PCOM Consensus

PCOM endorses all personnel actions taken at the 1992 Spring Meeting.

953. Future Meetings

The 1992 Summer PCOM meeting will be hosted by J. Malpas in Cornerbrook, Newfoundland, Canada, on 11-13 August 1992. A 2-day field trip will precede the meeting on August 9-10 1992. The cost of the field trip will be ~$100/participant, to cover the cost of a helicopter.

The 1992 PCOM Annual Meeting will be held at the Bermuda Biological Station (BBS). A cost of $120/day will include accommodation and meals. Austin (the JOIDES Office) will host the meeting. The University of Miami, Rosenstiel School of Marine and Atmospheric Sciences, which was to have hosted the Annual Meeting, will host a subsequent meeting in Miami. PANCHM will meet on Tuesday, 1 December 1992, with PCOM meeting on 2-5 December 1992. A field trip may be arranged. A deposit of $100 each will be required by BBS 4 months in advance of the meeting. Deposits should be sent to Austin. Double rooms will be available.

The 1993 Spring PCOM meeting will be hosted by J. Mutter at Columbia University, Lamont-Doherty Geological Observatory, on 26-28 April 1993.

The 1993 Summer PCOM meeting will be hosted by R. Arculus in Australia during the second or third week of August, 1993.

954. Other Business

ADDITIONAL DRILLING PLATFORMS

A quote had been provided by SEDCO for additional drilling platforms for shallow-water operations such as A&G and NJ/MAT (Agenda Book, white pages 393-396). Consultant H. Zaremba's proposal had focused on a dependent option. SEDCO offered to get cost information on independent options free of charge. The result was a cost estimate of $1.8M for NJ/MAT drilling, more for A&G. PCOM could go back to Zaremba and ask him to provide more information of this type. Austin asked whether PCOM should pursue the matter further, however, if it was apparent that the costs would be excessive.

Francis suggested not taking the Zaremba proposal further. The dependent platform, that was the subject of most of the proposal, was expensive and there was no space for it on *JOIDES Resolution*. As for independent platforms, PCOM had bids in hand. Austin added that bids provided by SEDCO were similar to one provided by NJ/MAT proponents. Furthermore, ODP's budget was likely to be below LRP levels. Malpas said that he had not seen Zaremba's proposal, but acknowledged that no further action should be taken in view of budget problems. PCOM should thank Zaremba, but not spend more. Austin pointed out that consideration of the additional platform issue was continuing, but asked whether PCOM should keep talking about it if there was no money in the budget for it. Malpas replied that PCOM could not discuss the issue until the budget situation became clear. Lewis stated that the budget had a LRP target figure, but did not take into account items such as additional platforms and Arctic drilling requirements. Such items would have to be taken into account by the budget.

Austin noted that he had been circumspect in dealing with additional platforms in the four-year science plan. NSF was not pushing international partners to get extra money into the system before 1994. Malpas stated that the Briden Report had suggested that PCOM look at that. Austin said that this discussion constituted such consideration. The minutes would show that PCOM understood the budget. Taylor felt that PCOM should also put pressure on the budget system. EXCOM should help PCOM. Austin responded that he would take the additional platform cost estimates to EXCOM. Francis explained that mobilization and demobilization of an additional platform constituted the biggest cost element. That demonstrated the advantages of long-term charter of *JOIDES Resolution*. Austin stated that the minutes would show that PCOM thanked SEDCO for getting the additional platform cost estimates.

FUND FOR LEV ZONENSHAIN

Sharaskin explained that Zonenshain (LITHP member) was now in the US receiving medical treatment, but had no recent news on his condition. A copy of an advertisement from *Eos*, regarding a fund set up to cover living expenses for Zonenshain and his wife, was included in the Agenda Book (white page 405). Austin added that Zonenshain was in South Carolina. Individual contributions could be made, but Austin felt that an official ODP contribution might mean more. Contributions could be sent to Austin and he would put them together with an official mailing. Taylor stated that USGS had paid for Zonenshain's travel and his medical expenses were being covered.

REPORT OF THE EXCOM *AD HOC* COMMITTEE ON LONG-TERM ORGANIZATION AND MANAGEMENT OF ODP (BRIDEN REPORT)

Austin stated that EXCOM had initially asked PCOM to consider the report's recommendation concerning the need for regular and open scientific conferences and how to feed information from them back into the JOIDES scientific planning structure. PCOM was now considering all of the report's recommendations.

Malpas felt that examination of the recommendations item by item would take too long. He explained that he had received a letter from D. Falvey (C-A, EXCOM) stating that internationalization of ODP had been the centerpoint of the January 1992 EXCOM meeting. The origins of the debate had lain in attempts by France and Russia to get financial support for their national drillship programs. EXCOM had been concerned that that might drive a wedge into ODP, with potential loss of two members. J. Briden (UK, EXCOM) had, therefore, been appointed to look at the future of ODP paying particular attention to other platforms. Briden's final report, however, contained much more. Only two items were highlighted by EXCOM for PCOM to discuss: 1) scientific conferences, and 2) legs using other platforms on an *ad hoc* basis. PCOM did not have time to discuss the entire Briden Report. Malpas suggested the following course of action for PCOM.

1) Commend EXCOM on its action to review ODP's management structure and program operations.
2) Commend J. Briden on his comprehensive and lucid report.
3) Note that the Briden subcommittee was initially set up to consider "management of a program with multiple platforms", e.g., French, Russian and Japanese drillships. It had, however, somehow become much more and probably, as such, was inappropriate for a one-person subcommittee.

   [Austin noted that the Briden Report had already been endorsed by EXCOM. Malpas replied that that had been done without PCOM consultation.]
4) Note that ODP has been consultative at all levels in the past.

5) Note the apparent lack of consultation in the Briden Report, particularly with international partners (i.e., the report represented one person's view).

6) Request that EXCOM have the full planning structure comment on implications of the Briden Report before taking action.

7) In this light, express concern over the actions, and indeed the setting up, of the Dorman subcommittee without due consultation.

8) Note that JOIDES members, particularly international partners, were put in the awkward position of having to reply to (apparently) formal RFPs without due background data, with little time, with no clear statement as to what was intended (it had not been clear that it was just a request for interest), etc. This had been a wholly unacceptable way to determine serious interest in participating in future management, etc., of ODP.

9) Recommend immediate discussion of the Briden Report and implications of the Dorman subcommittee by each international and US member of ODP (all members to provide a [nationally] considered position paper to EXCOM), and through the planning structure (because of implications for science planning [PCOM], service panels and Science Operator [ODP-TAMU]), noting particularly the implications of "internationalization".

10) Indicate that ODP should not be rushed into major program restructuring because of the necessity to deal with one or two subcontracts (e.g., logging).

Proposed PCOM action: review the Briden Report/Dorman subcommittee initiative in terms of implications for the science program ("internationalization" issue) and present a position paper to EXCOM for their January 1993 meeting.

Malpas felt that his proposals represented the proper way to handle the situation if it was indeed a watershed in ODP. Beiersdorf agreed. Austin responded that, like it or not, the matter was proceeding, though the timeframe was uncertain. PCOM could review the Briden Report, but might already be faced with more reports/EXCOM actions by the time its review was completed. Malpas noted that the Dorman report would be given to EXCOM in June, so that a timeframe existed.

Francis reiterated that the Briden Report stated that *JOIDES Resolution* took up about 50% of total ODP funds (Agenda Book, white page 91). In reality, it was more than that. The report was, therefore, unduly optimistic. Austin replied that he would inform EXCOM of that.

Langseth felt that PCOM should express its concerns about the Briden Report and Dorman subcommittee. Austin asked whether a PCOM subcommittee would review the issue for the August PCOM meeting. Malpas expressed concern that EXCOM might act in June in such a way as to make such effort a waste of time. Austin offered to incorporate a letter from Malpas and others, expressing PCOM concerns, in the EXCOM Agenda Book, if the rest of PCOM was comfortable with its content. Kidd stressed that Briden's report did not represent a UK report. Austin defended Briden. He had been handed a "hot potato" and had done a lot of work. His report had assisted thinking on these issues and EXCOM was now in motion. Lewis felt that EXCOM should consult. Austin replied that EXCOM's feeling was that there was little time to consult the advisory structure. Beiersdorf felt that the discussion went further back. He recalled that EXCOM had been put under pressure by France at EXCOM's October 1990 meeting. The Briden Report had been a "shock-absorber". Malpas added that after the June 1991 EXCOM meeting, the immediate pressure was relieved when it became clear that NEREIS was not being supported directly by the Europeans. Austin replied that the issue was broader and involved French renewal. He added that the French had been relieved that the Briden Report had been written, because it aired issues they felt needed to be aired. ODP could not afford to lose international partners. The issues were important. PCOM could write a letter

and conduct a review, but PCOM should not kid itself: elements of this would go forward regardless. In response to Lewis, Austin stated that Briden's brief had been broader than just additional platforms. He asked PCOM to remember that the PEC III Draft Report recommended some of the same things, e.g., a review of the advisory structure. Malpas commended EXCOM and Briden, but felt that subsequent EXCOM action had been inappropriate. Austin felt that Malpas may have overreacted to the Dorman subcommittee's request. Austin agreed that wording of the request had been poor, but it had only been a request for interest and no timeframe had been assumed. Austin noted that he did not know how the Dorman committee issue would develop. He had been purposely kept out of it because he might have to evaluate some of the expressions of interest.

Langseth felt that the idea of a conference for presentation of scientific results should be preserved: not a COSOD, but analogous to lunar science conferences. Austin explained that the key was how it was funded, i.e., whether it was internal to ODP or attached to other meetings. If the latter, the issue became how to feed results back into the JOIDES advisory structure. Taylor stated that Fox (who had left the meeting) had asked him to point out that ODP sessions had been tried at AGU and had not been successful. They ended up preaching to the converted. It was better to have drilling results presented as part of other thematic sessions. Beiersdorf suggested maintaining COSOD-type meetings. They constituted the only way to discuss themes and make planning suggestions. Austin noted that COSODs were expensive. There had already been two and ODP was still not addressing all of their recommended scientific objectives. Pyle explained some background. Briden had initially suggested that IUGG have some sort of control over ODP: to run these meetings periodically and tell ODP what to do in some fashion. Pyle and others had felt that there were enough committees and enough advice, so what was finally included in the Briden Report was a compromise that did little, in Pyle's opinion. Austin felt that it represented ODP's continuing mania for self-examination.

Duncan stressed that it should be emphasized that activity was already underway on some fronts to extend communication of what was going on in ODP, e.g., *GSA Today* articles and synthesis volumes. These were attempts to reach a wider audience. Austin agreed. He added that PEC III had made the recommendation that Part B, *Scientific Results* volumes be discontinued and that the results be published in the open literature. Pyle noted that the PEC III Report was awaiting subcontractor responses.

Beiersdorf stated that COSOD meetings had perhaps been viewed as more successful outside the US. They had played a major role in planning. He asked whether ODP could live without that broad community support. ODP was viewed as a closed shop. Pyle informed PCOM that the continental scientific drilling program had been considering how to get together. Pyle had briefed them and they plan to have a continental COSOD. Austin agreed that, if Briden's suggestion for meetings was unworkable, a COSOD was needed. ODP was now at a watershed in the areas of additional platforms and technology issues. He felt that there was more justification for a COSOD at present than there had been for COSOD II. Berger supported Beiersdorf's idea. Austin stated that he would inform EXCOM that PCOM favored a COSOD. Beiersdorf stressed the need to spread the word at conferences, in addition. Taylor cautioned against special ODP sessions at those conferences. Austin felt that that was happening, but that PCOM would have to stress a COSOD if it thought one was necessary, because it would be expensive.

Austin asked that the letter providing PCOM's response to the Briden Report and Dorman subcommittee issues be sent to him soon. He reiterated that Briden had been given a broad brief. Kidd felt that PCOM's main objection related to EXCOM's acting on the Briden Report without consultation. Malpas said that he did not object to Briden covering the issues if he had been given that mandate, but felt that it had been an inappropriate task for one person. Austin noted that, in a sense, PCOM had already received a concession in seeing the Briden Report at

all. The Briden Report was an EXCOM document. Austin asked that he be provided with a letter (drafted by Malpas, Beiersdorf and Langseth) by mid-May. It would represent PCOM's response.

PROGRESS REPORT ON MEDITERRANEAN DRILLING PROPOSALS

Cita-Sironi had requested permission to give a progress report on Mediterranean ODP proposals. Active Mediterranean proposals were: 324-Malta Escarpment, 323-Alboran Sea (ranked in 1991 and 1992), 330-Mediterranean Ridge (ranked in 1991 and 1992), 379-Mediterranean drilling, 383-Aegean Sea, 364-Sardinia/Africa Strait, 391-Mediterranean Sapropels (ranked in 1991 and 1992) and 399-Alboran Sea (Watts).

In response to thematic panel comments, 323 and 399 (Alboran Sea) were being revised and integrated. In addition 330, 379 and 383 (Mediterranean Ridge) had been discussed together at a meeting in Milan on 2 March 1992 (a short report of that meeting was available as a handout). All proponents invited had attended the Milan meeting. The strategy for Mediterranean Ridge drilling involved two stages and two legs. 1) Shallow, post-Messinian objectives, including tectonic, fluid flow and paleoceanography/productivity/sea level objectives. The first leg was drillable immediately; a site survey package would be submitted by the August deadline. 2) Deep, Messinian and pre-Messinian objectives, i.e., décollement zone(s), style of deformation of pre-evaporite sequence and deep fluid circulation. The second leg would be drillable after additional MCS, OBS and multibeam data had been acquired. An additional meeting was planned for 1992.

The ECOD workshop in Copenhagen would take place on 6-8 May 1992. The theme was ODP in the Atlantic and the objective was creation of a "second wave" of drilling proposals.

A roundtable discussion on "Focusing scientific objectives for deep drilling in the Mediterranean" would be held at the XXXIII Congress and Plenary Assembly of CIESM (International Commission for the Scientific Exploration of the Mediterranean Sea) in Trieste, Italy, 12-17 October 1992. Conveners were Cita-Sironi and M. Comas. (A list of contributors was available as a handout.)

The following new proposals were expected: Eratosthenes Seamount, Rhone Fan, reoccupation of DSDP Site 372 for bio-chrono-magnetostratigraphic purposes, Mediterranean Ridge-Phase 1 and Plio-Pleistocene transect (paleoceanography).

Discussion

Austin commented that the Mediterranean community had been active in response to panel input. A number of Mediterranean proposals, if they were revised according to panel input, would probably fare well in rankings. Kidd noted that the new proposals would be in addition to the 25 SSP was already charged to consider. They would not get the rigorous examination that other proposals had had. Austin stated that PCOM had talked in December 1991 about whether a new program that had not gone through a global ranking should get on the drilling schedule. PCOM did not put a new program on the FY93 schedule, but never answered that question. Austin thought that it was possible for a new program to shoot to the top of rankings and get drilled, but it had not yet happened. Cita-Sironi stated that the Rhone Fan proposal was ready before Leg 107 and that the stratigraphy proposal was a reoccupation of an old DSDP site, so plenty of information was available. In response to a question from Berger, Cita-Sironi explained that ECOD comprised 12 countries and stressed that the Mediterranean was not its only priority. ECOD had other objectives and was thematically oriented. The Trieste meeting would focus on the Mediterranean, but the Copenhagen meeting was broader in scope.

THIRD-PARTY TOOLS

Austin explained that new third-party tool guidelines differed from previous guidelines, because DMP had taken on the issue of enforcement. DMP had addressed the degree to which the third party was serious about completion. DMP needed feedback on the revised guidelines (distributed to PCOM as a handout the previous day).

Lyle expressed concern that the guidelines seemed to require that all mature tools be bought by the Science Operator or Logging Contractor (handout, p. 4, paragraph (iii)). Francis suggested changing the guidelines to indicate that ODP would acquire the tool if PCOM thought it worthwhile. Austin stated that "resources permitting" would be added and stressed that PCOM would approve tool acquisition if it got to that stage. Watkins suggested replacing DMP with PCOM. Austin, however, recalled that PCOM had decided that DMP should be the panel to monitor third-party tools. DMP had always kept PCOM informed. Langseth suggested adding that ODP would acquire a mature tool "if DMP recommends and PCOM endorses." Austin reiterated that "resources permitting" would also be added.

Becker asked who would submit the mature tool proposal. Austin replied that when a tool went from outside to inside ODP, the proposal would come from inside, i.e., Science Operator or Logging Contractor. The third party would not propose that the tool be moved to ODP.

Austin asked whether PCOM felt comfortable with the language concerning enforcement. Francis stated that these were just guidelines and that they were acceptable with the changes of wording noted. Austin added that Becker should inform DMP that the appropriate operator (Science Operator or Logging Contractor) and PCOM should be involved at all levels. The revised guidelines would be published in the October *JOIDES Journal*. PCOM passed the following motion.

PCOM Motion

PCOM endorses the DMP guidelines for third-party tools, except that the wording on page 4, paragraph (iii) be changed to read:
"If DMP proposes and PCOM endorses the Mature Tool Proposal, the Science Operator or Logging Contractor will progress the acquisition of the tool for ODP provided funds are available."
Motion Lewis, second Beiersdorf Vote: for 13; against 0; abstain 0; absent 4

PCOM WHITE PAPER

Austin stated that PEC III and the Briden Report discussed splitting PCOM into a science committee and a scheduling committee and also encouraged PCOM to be proactive. He noted that PCOM had never written a White Paper.

Pyle responded that the LRP was PCOM's White Paper. Austin said that he was thinking of a more "nuts and bolts" document. Pyle recalled that PCOM's mood at the time of the LRP had been one of wanting to be all things to all people. Malpas felt that a White Paper might not be useful; such a document would have to be flexible. Discussion, however, might be useful.

Austin explained that part of the motivation for a White Paper was the prospect of internationalization of the JOIDES Office. At present, there was no guidance on how PCOM worked. Malpas commented that he had seen PCOM operate in various forms. He was concerned about PCOM's lack of memory. Some issues were discussed unnecessarily and guidelines might help. Austin stated that it was up to the Chair to remind PCOM of what had happened at previous meetings and items could be forgotten. There were always alternates and

new members present. Malpas thought that one item that tended to get recycled was the working relationship between PCOM and ODP-TAMU. He added that it was liaisons, from, e.g., ODP-TAMU and JOI, Inc., who were the ones with the longest memories of past PCOM discussions. Austin noted that the present rotation period for PCOM members was 4 years. Austin said he was uncertain about how to proceed with a written document. He noted that JOI, Inc. prepared a policy manual listing responsibilities of all people actually employed (e.g., JOI, Inc., JOIDES Office). That would be one type of document.

Malpas felt more than that was needed. He said that it would have to include the way PCOM related to the panels. Members tended to become familiar with that over a period of time. It was the philosophy of how the planning structure worked. That could be tackled by discussion, perhaps with a document. Beiersdorf asked about the rationale for splitting PCOM into two groups. Austin replied that there had been a feeling that PCOM's charge to schedule the drillship blinded it to science issues. Therefore, two PCOMs were proposed, one to consider themes and science and transfer those thoughts to a second group that worried about scheduling. Malpas disagreed that PCOM was blind to science. Berger commented that he had been told that PCOM took too much interest in science. Austin countered that PEC III and the Briden Report had both made similar recommendations. Beiersdorf said that there were already a lot of panels and links. He suggested having longer meetings. Austin recalled that STRATCOM had proposed focusing. He felt that that was happening anyway, with programs like NARM and offset drilling. Malpas pointed out that, while some PEC II members had sat in on PCOM meetings, no EXCOM members had done so. Perhaps some EXCOM members should come to PCOM and see what happened. Malpas suggested that PCOM should discuss these issues at one PCOM meeting each year. A White Paper would then probably be unnecessary.

Austin asked whether PCOM thought that it was now pursuing certain themes. There was general assent. Kidd commented that PCOM had been criticized for not being responsive to panels. He had seen, however, that PCOM was responsive and was operating well.

Francis felt that some changes in procedure might be necessary. For instance, the science of NJ/MAT had led to it being scheduled as Leg 150, but high-resolution seismics were not run. That might prevent the leg from taking place because of safety concerns related to the possible presence of shallow gas. Procedures might have to be changed, if there was to be a lot of shallow-water drilling. There was presently no way of funding site surveys, because they did not produce sufficient science. Austin agreed that PCOM might have to return to that issue and acknowledged that site-survey funding for Leg 150 was not available. Kidd commented that SSP might have to specify different site-survey data for shallow-water sites. Austin stated that the Leg 150 Co-Chiefs had all existing data, but that might not be enough. Francis stressed that surveys were needed for specific sites. Taylor did not feel that this issue affected how PCOM worked. Austin observed that if NJ/MAT was not drilled, it would be a signal that data must be gathered.

Langseth felt that PCOM spent insufficient time considering service panel input and that it sometimes also gave logging short shrift. Austin responded that SSP was now plugged into the flow of mature proposals. Kidd agreed that there had been a major improvement over the previous two years. SSP would have to examine site-survey requirements for new environments, e.g., offset drilling and shallow water. Austin admitted that PCOM might not have paid sufficient attention to logging. His view was that logging represented an industry-influenced "black box". ODP-LDGO had done a good job getting exposure for logging and the emphasis on logging might increase as ODP drilled deeper holes. Perhaps more logging experts were required on PCOM. PCOM had expressed concern about the provision of expertise on panels, but the same applied to PCOM. At the moment, PCOM was at the mercy of institution directors, though he had tried to educate EXCOM. Taylor felt that continuity of

the DMP Chair had been helpful. Austin added that FMS had made a big impact. He would make time available for discussion at the August PCOM meeting. He suggested that Lewis (future PCOM Chair) continue to consider PCOM's disciplinary balance. In response to a request from Malpas, Austin said that he would invite one or two EXCOM members to PCOM in August.

940. Adjournment

Austin noted that two PCOM members were leaving: Cita-Sironi and Tucholke. They would be irreplaceable and, on behalf of PCOM, he wished them well. Austin thanked Duncan and Oregon State University for hosting the 1992 PCOM Spring Meeting. The meeting was adjourned at 1:45 PM.

APPENDICES ATTACHED TO THE 21-23 APRIL 1992 PCOM SPRING MEETING

1. Recommendations of the Report of the EXCOM *ad hoc* Committee on Long-Term Organization and Management of ODP (Briden Report).
2. NSF report, supplemental information
3. JOI, Inc. report, supplemental information
4. Science Operator report, supplemental information
5. Wireline Logging report, supplemental information
6. BGR high-temperature, dewared, three-component magnetometer
7. SSP report, supplemental information
8. Leg 141 scientific report, supplemental information
9. Leg 142 scientific report, supplemental information
10. DataNet components
11. Schematic comparison of existing and proposed shipboard computer systems

HANDOUTS DISTRIBUTED AT THE 21-23 APRIL 1992 PCOM SPRING MEETING

1. Map showing 1992 thematic panel global rankings
2. Science Operator DCS and non-DCS engineering report, supplemental information
3. Memorandum: PCS—Current State of Development (by D. Huey and T. Pettigrew)
4. Report of the Steering Group for *In Situ* Pore-Fluid Sampling
5. Advertisement for ODP-TAMU Manager of Information Services
6. DMP: revised third-party tool guidelines
7. SSP minutes (1-3 April 1992)
8. Weekly Science Report from Leg 143 co-chiefs (11-18 April 1992)
9. Letter from K. Gillis to J. Austin re: HD site survey data
10. ESCO report of working session: Status and Future Perspectives of ODP Proposals on the Mediterranean Ridge (Milan, Italy, 2 March 1992)
11. Announcement and list of expected contributions to roundtable: Focusing Scientific Objectives for Deep Drilling in the Mediterranean (Trieste, Italy, 12-17 October 1992)
12. Ocean Seismic Network Newsletter, April 1992.

FUTURE ORGANISATION AND MANAGEMENT OF THE OCEAN DRILLING PROGRAM: a discussion paper with recommendations+

SUMMARY

ODP should be the unifying and over-arching organisation for international scientific drilling in which programmes are fully integrated, funds are comingled, and truly international scientific parties carry out the work. Already ODP is an outstanding example of international cooperation in science, and in general it operates efficiently, fairly and in the best interests of advancement of science and technology. Nevertheless improvements are possible and are necessary*.

- to further integrate ocean drilling with cognate science (i) (ii)
- to ensure that ODP pursues the most important scientific challenges in the best possible ways. This requires a single planning command with strong proactive Thematic Committees (x - xii).
- to improve international sharing of the governance of the programme (iv, v) and its operations (vi - ix). This requires creation of opportunity to devolve operations among partner members.
- to undertake pilot experiments with alternative ships (xiv) and to prepare for their incorporation on a more regular basis (xiii, xv).
- to ensure that ODP continues to have state-of-the-art ships and technologies at its disposal (xv).

+ edited February 1992

*(i) (ii) etc refer to recommendations in paragraph 33.

INTRODUCTION AND TERMS OF REFERENCE

1. The structure and management of ODP are designed for single vessel operation. The need to consider other situations arises from a variety of causes:

- Ocean drilling is uniquely able to address fundamental issues in marine and solid earth research and observation. Some of these issues are relevant to natural resources or environmental change, and innovative technological spin-off from drilling is likely to be important. All are agreed that we should address these issues in terms of scientific and technological challenges, and not primarily in terms of the capabilities of the one ship currently under contract to ODP.
- There is a view that more work needs to be done than a single vessel can do in an acceptable time. Different vessels will have different advantages.
- There is a range of views on whether the balance of work proposed in the Long Range Plan is right for addressing the most important and fundamental scientific problems that can be tackled with the aid of ocean drilling. Most notably there is a widely held view that much greater sampling of the oceanic sedimentary record (mostly but not exclusively the Neogene) is a crucial element of studies of Global Environmental Change. Others believe that deep crustal drilling merits more effort.
- Even though JOIDES Resolution is the most capable ocean drilling vessel afloat, the global scientific community still has legitimate ambitions and strong scientific needs for much enhanced core recovery and deeper crustal penetration compared with that achieved up to now, and riser drilling in areas where gas and oil overpressures might be present.
- If other ships were added and if logistics allowed, JOIDES Resolution could be concentrated where its capabilities are most needed ie where penetration and recovery in 'difficult' sequences are most critical. The engineering and technical efforts in ODP are already concentrated on these problems.
- The need to integrate drilling into multidisciplinary and multi-technique research programmes, including simultaneous sea floor and borehole observation is a further factor demanding more ships.
- Russia, France and Japan have already made moves toward securing additional vessels (see paragraphs 18 - 20) and this is in itself a reason for considering the structure of programmes of these vessels and ODP.
- France in particular believes that a less centralised operation would be better for the partners.

2. I therefore decided to adopt the Terms of Reference proposed by Dr Falvey in San Diego, adding the italicised words myself to allow me to comment on the status quo:

> To recommend changes in the present organisation and management of ODP to increase its effectiveness and to make provision for new and/or additional drilling platforms through the mid- to late- 1990s.

This formulation is sufficiently general to cover various specifics in the alternative drafts attempted at the EXCOM meeting by Dennis Hayes and myself.

PRINCIPLES OF INTERNATIONAL SCIENTIFIC OPERATIONS

3. Large international science is commonly categorised under two headings: big facilities and cooperative programmes. The big facilities are usually the central focus of research programmes that are designed to extend the limits of knowledge in a relatively narrow field. The cooperative programmes on the other hand call for large scale cooperative, multidisciplinary research directed at wide ranging problems and issues. They usually require the use of tools from a variety of scientific fields, relying as much on small and medium sized instruments as they do on large items of equipment. CERN is an example of the first type; WCRP an example of the second type. The Ocean Drilling Program is unusual in that although it is first and foremost a programme of cooperative multidisciplinary research of the second category it is focused nevertheless on a single central facility that takes up about 50% of the total funds annually.

4. It is axiomatic that ODP must primarily be SCIENCE DRIVEN. The scientific scope of a further decade of ocean drilling was addressed by COSOD II; within that, the outstanding issue is the balance and sequence of work, guided by strategic scientific debate moderated by shorter term operational planning. The rate of achievement will then be determined by the rate at which funds and facilities become available. The amount of science that can be done in the decade, then, will be determined essentially by the number of vessels and total funding over the period.

5. International programmes should address objectives which are not achievable (at all or as well) by national, bilateral or multilateral efforts. For example, by
   - harnessing otherwise unattainable facilities
   - enabling more ideal coverage of the objective
   - bringing in more countries and more good scientists

   Although the capacity of some country-groups such as the EC to pool their efforts is likely to increase, some important countries will, as now, be able to put their money into only a few international programmes at any one time. Truly international programmes, therefore, will continue to be difficult to mount. To ensure maximum participation, they must be clearly focused on important objectives, and the financial demands that they make must be realistic.

6. Because drilling is not an end in itself, but rather a means towards diverse scientific goals, it is essential that ocean drilling be better coordinated with the pursuit of those goals by other organisations such as IGBP and FDSN. It is not realistic to set up an Executive to enforce coordination. Two actions are needed:

   - to further develop the bilateral co-ordinations that have already been begun, by Liaison Committees with FDSN and with IGBP programmes such as JGOFS and PAGES;
   - to establish a regular <u>open</u> scientific conference on the Scientific Contributions of Ocean Drilling. This may best be arranged as part of the IUGG General Assembly. Ways should be devised of ensuring feedback from the conference into the conference into the JOIDES Advisory Structure eg special

sessions on future challenges, and summary reports from session conveners. Obviously attendance of PCOM members and others others involved in ODP decision-making is highly desirable. Incidentally, such a series of conferences might contribute to solving problems of 'visibility' of ODP by creating publicity and promoting publications.

The Terms of Reference of the advisory and executive bodies of ODP might need to be adjusted to require them to take consider the issues raised in the Conferences.

7. ODP does not have, and in my view should not seek, a monopoly in ocean coring or drilling. Scientific and industrial drilling, from various kinds of platforms on the continental shelves and margins, will continue independently of ODP. Piston coring will certainly continue to be part of other research programmes; coring capability is likely to improve and the number of vessels capable of high performance coring is likely to increase. International drilling operations should be unified in ODP. Separate single-national or bilateral programmes are likely to develop and should be encouraged. Formal and informal coordination between them and ODP should be established (cf paragraph 6). The criterion for deciding whether a programme should be planned within or outside ODP should be maximising the effectiveness of the programmes in toto.

FINANCIAL CONSTRAINTS ON ODP

8. EXCOM members have judged that a large step-increase in co-mingled funding for international ocean drilling will not be achievable via normal sources in national science budgets in the foreseeable future. Later in this paper (paragraphs 22 - 28) I will consider the following scenarios:

(i) Essentially steady state budget: opportunities for individual contracts for additional ad hoc projects by alternate vessels

(ii) Small expansion: subscription increase ≤15%. I believe increases in comingled funds of this magnitude may be achievable if the case for the additional science is strong. This might buy ~ 3 months shiptime on a less expensive vessel than JOIDES Resolution, which might be either a commercial vessel of limited but adequate capability for the chosen task or a highly capable research vessel of a member nation provided to the programme on the terms indicated in paragraph 9.

(iii) Major expansion into a truly multiplatform programme. I believe this could only happen as a result of the success of an exceptional scientific case for stepping up work on a particular theme. This would almost certainly have to be one with high sociopolitical impact e.g. global change; or international stewardship of the Arctic, which might bring in extra funds from many or all members.

9. I do not believe that ODP collectively will buy or pay conversion costs of any ship. ODP is not attempting to recapitalise JOIDES Resolution. ODP will rely in the future, as in the past, on a nation or nations buying or equipping such a ship independently of ODP and offering it to the Program via a lease or other contractual arrangement. The current practice whereby the nation taking this responsibility also becomes host to support-facilities and pays a

higher contribution to comingled funds than the others, is in line with established convention in science and in other realms of international collaboration e.g. International Seismological Centre and the United Nations Organisation respectively. Ideally JOIDES would lay down a priori the specification for any vessel it hoped to use in this fashion. In reality (and particularly for a vessel that is likely to be only devoted part-time to the Program) ODP would be one partner in this process together with the owner and other interested parties. Clearly JOIDES is under no obligation to accept any proposal from a member country to add a facility to the International Program. If this is to happen it must proceed by negotiation in tandem with agreement by JOIDES to the relevant science programme, and in concert with the search for necessary funding. ODP will have to be satisfied on the new vessel's capability and the financial commitment of the owner-government before incorporating it into the programme. TEDCOM or another specialist group would be needed to evaluate each facility on offer.

PRINCIPLES OF ORGANISATION

10. The present organisation of ODP has three main parts: an arrangement for funding; a scientific and management oversight, planning and advisory process; and an operating mechanism. The program is funded by the US National Science Foundation and 7 non-US partners, with the US providing slightly more than half the total operating funds. Each of the non-US partners provides an annual payment according to terms set out in a bilateral Memorandum of Understanding between the partner and NSF. A formal body, the Ocean Drilling Program Council, meets annually to discuss issues related to intergovernmental co-ordination and funding.

> Overall program oversight is provided by representatives from the institutions involved, ten in the US and seven from the partner countries. The collective set of institutions is known as JOIDES: Joint Oceanographic Institutions for Deep Earth Sampling. The JOIDES Executive Committee provides oversight and guidance to the program and is made up of the directors or their representatives of the JOIDES institutions. Scientific planning and co-ordination, and specific implementation plans are provided by a Planning Committee made up of scientists from each of the member institutions. Various Panels and Working Groups whose mebership is drawn broadly from academic, government, and industrial laboratories advise the Planning Committee in its deliberations. The Planning Committee reports to the Executive Committee; the advisory process guides operations through the prime contractor.

The operations of the program are handled by a prime contractor, Joint Oceanographic Institutions Incorporated (JOI), a US non-profit consortium of the ten US JOIDES institutions. JOI is responsible to NSF and the partner countries for ensuring that the program is managed in accordance with the scientific advice provided by the JOIDES advisory committees and within the budget constraints. JOI subcontracts the ship and science operations to Texas A&M University, the wireline services operations to Lamont-Doherty Geological Observatory (LDGO) of Columbia University, and the Data Bank Operations to LDGO.

The questions to be addressed are
i. are changes needed to improve the present single-ship ODP?
ii. what devolution of responsibilities is possible or desirable (especially with regard to additional vessels)

Written evidence submitted to me by members overwhelmingly endorsed the present overall structural approach to the management and implementation of ODP. This evidence reinforces the views expressed in EXCOM. Incidentally a UK Cabinet Office study two or three years ago of international scientific programmes compared ODP very favourably in many respects with other programmes to which UK belongs. All this evidence persuades me that my Terms of Reference are adequate and that a more radical approach, considering a new structure ab initio, is not necessary.

11. The option of separate planning for separate vessels with distinct programmes did not find much favour among EXCOM members in discussion at San Diego. I believe there are several reasons why ODP planning and management should be organised as a single international scientific programme:
A scientific reason is that the planning structure must be matched to the science to be addressed, which cannot be compartmentalised except at working level i.e. there must be Executive and not merely Coordinating structure above the Thematic Committees. Hence the latter must be Advisory Panels and not EXCOMs.
A political/financial reason is that members have indicated strongly that the unity and uniqueness of ODP are essential for them to justify their membership.
A managerial reason is that to have parallel Executives for (sub) programmes which interact strongly both scientifically and operationally, is bound to be inefficient and is likely to lead to conflict.

12. The operational structure, however, must match the optimum distribution of facilities i.e. Ship-support for each participating ship could be separate, and the responsibilities of the present Science Operator could be analysed and divided to prepare for such an eventuality. The Logging Operation is a precedent for treating specialist or central services by means of separate contracts. The demarcation line between devolved and central ODP facilities will have to be carefully drawn. e.g.

Publications and Engineering Development might best remain centralised functions for all ODP, whereas the Staff Scientist functions, up to and including the Initial Results volume, might be better with each ship-support unit. This rearrangement would have two advantages
(i) it would give partner members the opportunity to participate in shore-based operations in the near future and
(ii) it prepares the way for incorporating new vessels.

I make several recommendations for implementation of this more distributed operational mode (paragraph 33, items (vi)-(ix)), but the situation is complicated by shortage of time, and by the fact that the sub-contract for the ODP ship is held by the

Science Operator. Perhaps in future it should be with the prime Contractor or even with NSF to allow more flexibility in selection of sub-contractors.

13. The international character of the Program is already evident at almost every level and in almost every aspect - but not quite. One exception is that JOI Inc. is exclusively a US corporation, and the other is that the JOIDES office and the related responsibilities of Chairmanship of EXCOM and PCOM have been confined to USA insitutions. I am aware that NSF and JOI are sensitive to this and I have framed my recommendations accordingly (paragraph 33 items (iv) and (v)).

France in particular has queried whether there are de facto defects in the international functioning of ODP in respect of decision making, operational participation and technological benefits. Although I do not make judgements on the reality or extent of such concerns my proposals nevertheless address them.

Subscription Structure

14. At present there are two categories of member
- ordinary member, paying $2.75M p.a. which entitles them to a unit of participation in the planning structure, the programme and the results (two members of the shipboard scientific party and a member of each JOIDES Committee or Panel).
- host member, which spent $19.4M for conversion of the ship, and annually pays a much larger annual subscription, $24.2M in FY '92, in exchange for which it receives about 6 units of participation in the planning and advisory structure, and the privileges and responsibilities of providing the prime contractor and major subcontractors. The value of these contracts (excluding only the in-out money to Underseas Drilling Inc. for the ship and Schlumberger for the standard logging operations) is ~$18.5M p.a. The host contribution could thus be thought of as comprising 6 units (6 x $2.75M = $16.5M) for participation, plus a further $7.75M. The rationale for this extra $7.75M has not been articulated, but it is the basis of USA's >51% share of the budget, and could be interpreted as reflecting the historical lead-role of USA and the intangible benefits that leadership brings. It is hard to evaluate whether this 'leadership premium' could justify the additional USA membership of EXCOM etc (10 rather than 6) which is a consequence of the history of the programme.

15. Although it will naturally be a matter for negotiation, this analysis points to a formula basis for incorporation of future vessels and shore-based operators: A host member must
1. Equip a ship for use by ODP at no cost to the program
2. Reach contractual agreement with JOI/JOIDES for any shore-based operator contracts that it will host.
3. Pay a standard subscription for the number of units of shipboard participation it proposes to buy. The costs for a part-time vessel will naturally depend on the fraction of the year involved. An example is given in paragraph 25.
4. Whether a new host member should also pay a "leadership" premium (see paragraph 14) would need to be negotiated on a case by case basis. I certainly do not believe that such a

premium should 'buy' further seats at the table at EXCOM etc.

16. I suggest that the basis of paying for use of any ship should be the same whether the ship is owned by an independent commercial operator or by a member organisation of ODP or otherwise i.e. ODP to negotiate a contract which it will expect to be at a highly advantageous commercial rate (as it has now with Underseas Drilling Inc.).

SOME POSSIBLE ADDITIONAL FACILITIES

17. EXCOM is aware of three proposals for drilling vessels by scientific research organisations, in Russia, France and Japan, that would impact totally or partially upon ODP. The current status of each of these is briefly described in paragraphs 18 - 20. It is also relevant that there is a growing number of research vessels with dynamic positioning capability, and hydraulic piston coring is advancing in penetration and core recovery, so that the amount of the sediment record that will be recoverable without a drillship will increase. Commercial drilling vessels might also be useful, and upgrading JOIDES Resolution might also be a possibility.

18. Russia is building a ship with capabilities broadly on the lines of JOIDES Resolution to be completed sometime between 1993 and 1995. It would operate in the Black Sea and Mediterranean for its first two years.
Dr Bogdanov has already invited other nations to become co-owners of the ship, contributing to its completion and equipping. This is a matter for member countries and not for ODP. He has proposed that the vessel and its research programme be incorporated into ODP, on a partial basis during the first 2 years, and then fully thereafter. The way to carry this proposal forward is outlined in paragraphs 9 and 15. Russia should inform PCOM the full specification and capability of the ship, and make an outline offer. For the initial period this offer should include
- specified participation in Programme Planning
- specified participation ship-board
- a proposal on charges to ODP for this involvement

Alternatively Russia should offer the ship to operate to a programme defined by PCOM at a specified daily all-in-rate based on a defined number of Russian/non-Russian scientists and technicians.
As I have indicated in para 8, I believe the capacity of ODP collectively to respond to such a proposal is limited to about 15% of the current subscription level.

19. France has proposed a 'lightweight' drillship for sediment coring to ~300m (50m in hard rocks) that would also be used for instrumenting deeper holes, emplacing and operating sea-floor experimentation packages, and to host and control submersibles. Some features of the initial specification were:-
Dynamic Positioning to work (including drilling) in 6000m water in winds of 35-40 knots
Aluminium drillpipe; heave compensation for various coring modes
Length ~ 100m, Beam 20 - 22m, Displacement ~ 8,000 tonnes, Deadweight ~ 3,300 tonnes
Range: 70 days and high latitude capability
Crew: 25 + drilling (15) plus scientific and technical (25)
Funding partnerships have been sought with other EC countries and the

EC itself but with no firm commitment to date. Possibilities for using a 'secondhand' ship are being investigated and M. Cailliau informs me that it is now recognised that unless this is successful, realisation of this 'NEREIS' concept is likely to be towards the late 1990s at best.

20. Japan is considering a vessel bigger and with the capability to outperform JOIDES Resolution. The aim is to drill 3500m beneath the sea floor with a 4000m riser (a total drill string of 7500m). A final decision on construction will be made in August, 1992. If the present plan is approved, the ship would be ready for scientific use in about 1999.

21. Each of these developments is to be greatly welcomed in principle. I have different questions to raise about each:

- In what ways will the capabilities of the Russian ship be different from or superior to JOIDES Resolution; hence what new dimensions will it bring to ocean drilling, as distinct from simply increasing overall capacity? Funding prospects are impossible to assess in the present state of the Russian economy and the fact that the vessel is being built in a shipyard now located in the Ukraine republic could be a further complication.
- The main strength of the NEREIS proposal lies in its commitment to, and integration with, global change studies. My uncertainty is how big will the technical niche for a lightweight drilling vessel be, if piston coring improves but if more difficult sedimentary sequences still require a heavyweight stable platform like JOIDES Resolution or better?
- I am particularly attracted by the emphasis on earth resources in the Japanese proposal, and by its intended riser capability. My uncertainty relates to the extent to which its programme may be integrated with ODP, and its likely availability to address ODP goals in and beyond its mother region.

In none of these cases is the ship built, the capability yet proven, or a firm readiness date known (hence EXCOM's very proper reluctance to commit itself last July). Each would pose its own problems for ODP in terms of funding, and challenges in terms of programme coordination. For these reasons I do not attempt to draw a firm scenario for any of them though, for the sake of lending substance to my analysis I do build hypothetical scenarious around them.

Ships with the required technical capability might be available for lease from industry by any of the partners. In this case the operating modes as noted below would not be substantially different, although additional subcontracts would be required. It would be useful for PCOM to continue its watching brief on industry capabilities so that they could be integrated as and when appropriate.

OPERATING MODES AND MANAGEMENT STRUCTURES

Changes not involving increase in the budget baseline

22. There is considerable support in EXCOM for the Thematic Panels to take a much more proactive role in promoting their themes. ODP could and, I believe, should immediately address:

(i) the case for redefinition of Thematic Panels to align more

closely with COSOD themes, and the need to re-emphasise that Panels should take account of all research on their theme and not just the aspects to be tackled by drilling, and advise PCOM accordingly. PCOM could then carry the project forward in partnership with other scientific research outside the programme.

(ii) fundamental change in membership of PCOM into

full members who decide long term strategy and determine the Cruise Schedule: a group of eminent geoscientists and engineers, including the chairs of Service Panels, who are not members of thematic panels.

advisory members: panel chairmen who act as proponents for their themes but do not participate in decision-making.

I believe there is a need to distinguish between long range scientific and technological planning on one hand, and short term programme planning and ship-scheduling on the other. However, I believe that these two functions could and should be carried out by the same authoritative body (the Planning Committee). One possibility is for one meeting each year to be devoted exclusively to long term considerations.

23. There is virtually unanimous support from the ODP community, and its science advisory structure and Executive, for continuation of the present scientifically broadly-based programme for the next few years which points certainly to JOIDES Resolution as the only available vessel-capable of addressing the more 'difficult' targets in the near-term.

As this uses up virtually the entire budget, commissioning of additional platforms would require input of extra SOE by a member or members (not necessarily USA) to drill a particular target that has been prioritised by the Scientific Advisory Structure for a defined cost.

One may ask why such a one-off exercise need be undertaken within ODP rather than as an individual research project like any other, particularly as it would certainly be very different operationally from JOIDES Resolution Leg. The prime reasons for choosing to operate this way would be

- that international participation and support had been found essential to mount the operation; ODP being the best mechanism for attracting the necessary funds;
- the advantages of using existing ODP structure to define the work, and using ODP operators to implement the task.
- a pilot operation on these lines would give ODP valuable experience of incorporating work on alternate platforms in the programme.

It would be helpful if an experiment on these lines were to be conducted in the near future e.g. using part of the additional funding recently input by NSF for a short dedicated leg (atoll or guyot, perhaps?). The initiative for such an 'add-on' to the current programme should, in principle, come from PCOM. But PCOM is unlikely to press its case unless it is given an indication that there is a good chance of funds being made available. Hence in practice either EXCOM would have to resolve that money from the planned budget for a particular year should be diverted to the special operation (with

corresponding economies in normal operations) or a member or members must offer additional funds on terms acceptable to PCOM. An interactive relationship between the key players will be essential to the success of such development.

Changes requiring small increase in subscription (≤15%)

24. As indicated in paragraph 8 I believe modest expansion of the programme to take on an additional platform part-time for highly rated projects is feasible.

25. A 'NEREIS'-like scenario. A very simple example would be provision of a ship costing $35,000 per day for 1/4 year; with a scientific party of 20 divided as follows: host country 6, seven other members 2 each.
The increment to the ODP budget might then be:

Ship contract	$3.15M	
Shore-based operator	$0.85M	(an arbitrary figure, but see below)
TOTAL	$4.00M	

Using the formula in paragraph 15 this could be met as follows:

Unit subscription 7 x	$0.4M =	$2.8M
Host country 3 units x	$0.4M =	$1.2M
TOTALLING		$4.00M

The new host country would therefore pay $1.20M in addition to its single-unit membership of the present ODP ($2.75M) i.e. $3.95M; which would be almost exactly offset by the income from the ship and operator contracts.
If, as I have suggested, $400k (or 14%) is as big a rise as subscribers could afford, then a bigger initiative than this would only be possible if the new Host bought more Units of Participation or paid a Host Premium.
The difference between having a commercial ship and one owned by an ODP member and Research Vessel operator, is that the latter would seek both the ship contract and the shore-based operator contracts and would aim to provide an integrated service. Nevertheless I advise that the two elements be the subject of separate contracts.

26. I recommend that subscription to the additional facility should be mandatory for all members. In other words this is simply an expansion of the present funding system. The present two-tier subscription structure would be adapted as described in paragraphs 14 and 25.
This model is also consistent with the 'Joint Venture' concept described by Dr Falvey (see EXCOM July 1991 report). Notice of change of subscriptions would be made according to the conditions in the MOU: the current conditions and NSF practice are satisfactory.

27. However EXCOM may wish to consider whether countries that do not presently belong to ODP should be allowed to join the add-on program as Associate Members without joining ODP proper. This might have the attraction of bringing extra small countries into the fold but it carries with it the seeds of instability and fragmentation. It might be difficult to demarcate which countries should be allowed to join as Associates. It might also be difficult in the event, to prevent an existing ODP member dropping to Associate status. For these reasons, I advise extreme caution. If the balance of a programme is to change, it must be decided collectively and not forced on the bulk of members by unilateral action of one. If allowed, the 'Associate Member' subscription would have to take account of the fact that these members would be 'buying in' to the benefits of the whole ODP

infrastructure: it might therefore be 3 or more times the add-on unit subscription in the example in paragraph 25.

Major expansion of programme and budget 'The COSOD-II Scenario'.

28. Major expansion of the programme is predicated on an influx of new money, most likely on the basis of sociopolitical as well as scientific support for a single theme. It is not possible to anticipate all possible eventualities, but the procedure indicated in paragraph 9 is likely to apply, with some modification of timetable depending on the amount of program-development that has been done outside ODP on the theme(s) to be addressed and on the rate of influx of new funds. If the expansion were in the field of global change and hence sediment drilling, I believe the Thematic Panels would need to be restructured in two groups, A (Evolution of the Earth Surface and Environment) and B (Evolution of the Earth Interior) respectively. One can imagine a scenario in which PCOM might allocate 90% of the light ship, plus 15% of the heavy ship to Panel A to deal with mud/chert sequences, and 85% of the heavy ship to Panel B, plus 10% of the light ship for intensive sampling of neovolcanic sediments. Further speculation is fruitless at this time, but my example illustrates why I believe planning structures should not be split, even for a 2-theme/2-ship programme.

TIMESCALE OF CHANGE

29. I believe these three scenarios cover the full range of possibilities for 1993-98 for the following reasons:

1. Members have indicated strong support for a broad-based programme (and hence JOIDES Resolution) for several years beyond 1993.
2. Member organisations will insist on a stable set of arrangements for a period of several years to be specified in the new MOU.
3. Ship and shore contractors will want similarly secure contracts. This is also in the interests of JOIDES as it will secure the best and most economic contract terms.
4. Members can only cope with variations with a considerable period of notice, as is allowed by current MOU conditions and practice for changing the subscription etc.

30. A new era of ocean drilling (NEOD) will dawn on the day an addition or replacement to JOIDES Resolution begins to address a JOIDES-defined priority objective. Whether that day is 1 October 1998 or earlier (or later if the post-1998 program were simply 'more of the same') remains to be seen. EXCOM should resolve to relaunch the programme with major publicity with the advent of NEOD.

31. For 1998 onwards it is possible that a quite different scenario may apply. It is highly debateable whether JOIDES Resolution will still be state-of-the-art. Whether or not this is so I believe the whole provision of platforms should be put to international tender. To do this, the scientific and technical requirements must have been set as much as 3 years prior to start date, i.e. by 1 October 1995. I believe EXCOM has to take a lead on this; either to endorse continued pursuit of COSOD II goals on a broad front of research or to define a narrower span of research. This must be a collective decision of member funding agencies; I do not believe an academically-dominated COSOD would entertain anything but the first option.

32. For NEOD it might be appropriate to consider further changes in member representation on Panels, Planning and Executive committees to take account of the scientific and managerial needs of the new programme, and the new balance of contributions, both financial and in kind. It might even be wise to break away from the current basis of representation, with its linkage to members financial contribution to comingled funds.

33. RECOMMENDATIONS

Relation of ODP to international science

(i) The sciences that are served by ODP would benefit from regular open scientific conferences on the Scientific Contributions of Ocean Drilling. EXCOM should explore the advantages of holding them during IUGG General Assemblies, and ways of achieving feedback into the JOIDES advisory structure (paragraph 6).

(ii) Bilateral liaison and co-ordination with relevant international scientific programmes should continue to be developed on the lines of existing coordinations with FDSN and JGOFS. This mechanism should also be used to link with national drilling or coring programmes (paragraph 6).

(iii) Consideration could be given to renaming ODP the International Ocean Drilling Programme (paragraph 7).

Governance of the Programme

(iv) NSF/JOI should investigate the internationalisation of JOI Inc. to include non-US institutions as full members (paragraph 13).

(v) EXCOM should be consulted on the question of the JOIDES office being located in non-USA institutions and JOI should be asked to ascertain the financial implications (paragraph 13).

Role of Subcontractors

(vi) The split of the Science Operator contract should be carefully considered to see how central functions can be separated from specific ship support functions. If this is feasible, then the Science Operator contract should be sub-divided with effect 1 October 1993 into a contract for ship-support functions plus one or more contracts for Central or Specialised Services (paragraph 12).

Tendering for Subcontracts

(vii) The Wireline Logging Operation for October 1993 onwards should be put to international open tender for a five year contract (paragraph 12).

(viii) The Science Operation is too big and too complex for fair open international tender to be mounted for the Contract(s) from October 1993 onwards. However, all members should be offered the opportunity to tender for (at least) the Central Services sub-contract(s) from 1995 (see (v) above). Expressions of interest

should be invited by 31 December 1992 or shortly thereafter. In the event that no competition is notified, the sub-contract(s) from 1993 should be offered to TAMU for 5 years. If notice of competitition is given, interim contracts for 2 years should be offered to TAMU (paragraph 12).

(ix) EXCOM should consider whether to treat the part of the Science Operator sub-contract that relates to support of JOIDES Resolution in the same way as in (viii), taking account of the factor that the SEDCO (Underseas Drilling Inc) contract for JOIDES Resolution is with Texas A&M and may therefore not be transferrable to another ODP Operator on the current favourable terms (paragraph 12).

JOIDES Advisory Structure

(x) PCOM should be reconstituted with membership of eminent non-proponent geoscientists (including the Chairs of Service Panels) and with its Terms of Reference changed to promote stronger pursuit of paramount themes, and to encourage proactive invitation, combination or variation of proposals (paragraph 22).

(xi) The structure and Terms of Reference of Thematic Panels should be examined with the aim of better reflecting the major themes of future science (paragraph 22).

(xii) EXCOM should discuss whether changing the basis of membership of all components of the Advisory Structure would strengthen the Program. (There are various issues (arising, for example, from paragraphs 6 and 15) such as representation on the basis of expertise rather than institution; USA/non-USA balance; but I have not been able to assess how important or urgent they are. Incidentally, I regard the question of USA non-JOIDES institutions to be a matter for USA).

Incorporation of new vessels

(xiii) ODP should announce terms and procedures under which ODP will consider proposals for changing the balance of the program and incorporation of new vessels (paragraphs 9, 15, 26, 27).

(xiv) PCOM should be encouraged to propose ad hoc legs using platforms other than JOIDES Resolution, interactively with the search for funds for such ventures (paragraph 23).

(xv) EXCOM (with advice from Advisory Structure) must determine the scientific and technical requirements for vessel(s) from 1998

onwards (Deadline September 1994) to enable JOI to draw up an invitation to tender to be announced 1 October 1995. EXCOM should decide whether invitations are to be confined to member countries of ODP (Deadline Summer EXCOM 1995) (paragraph 31).

(xvi) EXCOM should record that it recognises that achievement of a multi-vessel programme will mark a new era in ocean drilling that may require further modification of the advisory and operational structure (paragraphs 30 - 32).

CONCLUSIONS

34. If implemented these proposals will:-

- make possible a better programme as soon as the effects of reform of the Planning process become felt;
- promote further improvement by timely incorporation of new vessels;
- enable wider distribution of shore-based subcontracts after October 1995, if members so wish;
- establish a mechanism for dealing with any definitive proposal for incorporation of new vessels, as soon as possible, and hence, in principle....
- make possible incorporation of additional vessels, as soon as any known vessel is likely to be available and its capability proven;
- enable ab initio specification of ODP ship requirements with effect from October 1998;
- enable full and open competition to provide for all of these ship requirements for ODP from October 1998;
- promote enhanced vitality of the programme by creating a New Era of Ocean Drilling to carry us into the 21st century.

J C BRIDEN
4 December 1991

Version 3 -- May 15, 1992

REPORT OF THE ODP AD-HOC SUBCONTRACTING COMMITTEE

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INTRODUCTION

Following the report of Dr. J. Briden on "Future Organization and Management of ODP" at the January 1992 Bonn meeting of EXCOM, an Ad-Hoc Committee consisting of Craig Dorman, Hans Durbaum and Dave Falvey was appointed and charged to:

> "Recommend to EXCOM (and via EXCOM to JOI) specific contracting options to achieve continued ODP excellence and demonstrated cost effectiveness with enhanced international participation during the ODP renewal period (1993-2003)
>
> i.e. What should be tendered for bid?
> To which offerers?
> How? When?
> How evaluated?
>
> Caveat: NSF intends sole-source prime contract to JOI, Inc. for 1993-1998."

In accordance with the Plan of Action and Milestones approved in Bonn, C. Dorman circulated a request for expressions of interest to EXCOM members on 30 January 1992 (Appendix A*). This request covered Science Operator and Wireline Logging Operations subcontracts. In response to requests of members, this letter was amended on 14 February to include the ODP Site Survey Data Bank subcontract.

Responses received by 25 February (Appendix B) were distributed by JOI to all EXCOM members.

The Ad-Hoc Committee visited Lamont-Doherty Geological Observatory (LDGO) on 27 February 1992; JOI, Inc. on 28 February; and Texas A & M University and Research Facility (TAMU) from 29 February to 2 March. During the LDGO and TAMU visits the Committee received detailed briefings on current operating procedures and discussed a range of potential contract and operating changes for the renewal period. Copies of the briefing material provided are at Appendix C.

*Appendices are available at JOI with the original copy of this report.

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At JOI the Committee reviewed responses and discussed future committee procedures. The Committee also clarified the fact that JOI plans to extend existing contracts through 30 September 1993, so that competitive offerings would indicate 1 October 1993 as the start date. At this meeting it was decided that in order to meet BCOM concerns with incremental costs of the Committee and to minimize concerns with potential conflict of interest (EXCOM had agreed in Bonn that ODP members represented by individuals appointed to the Committee would not be excluded from expressing interest and participating in any resulting competition), our initial plans of visiting all offerers could be cancelled. It was felt that visits to France and Russia were appropriate to improve understanding of their interests, particularly for the post-1998 time period. C. Dorman thanked the locations visited and notified respondees of the substance of this change in plans by letters dated 10 March 1992 (Appendix D).

On 11 April, H. Durbaum and C. Dorman as Committee representatives, along with Tom Pyle of JOI, met with a French delegation headed by M. P. Papon of IFREMER to discuss French interests. Briefing materials from this meeting are at Appendix E. The Committee representatives and Dr. Pyle were then joined in Moscow by Mr. T. L. Pettigrew of TAMU's Development Engineering Department, for a 13 April meeting at the Institute of the Lithosphere. At this meeting, chaired and coordinated by Dr. Nikita Bogdanov, representatives of the Institute of Geosystems and the Research Institute of Drilling Technology described their responses to the request for statements of interest, and Dr. G. Gamsakhurdia of the P.P. Shirshov Institute of Oceanology discussed the status of the Russian drillship. C. Dorman and T. Pettigrew remained in Moscow through 19 April for further technical discussions and tours of facilities. Briefing and descriptive material, and Mr. Pettigrew's trip report, are at Appendix F.

Since there was significantly greater specificity of expressions of interest, as well as time-pressure for competition, for the first phase of the renewal period (1993-1998), the Committee concentrated on that period. We present first our findings and conclusions for this phase, and then nine recommendations which are based upon them. A later section of this report deals with the post-1998 period.

FINDINGS AND CONCLUSIONS (1993-1998)

a. ODP Site Survey Data Bank. The Data Bank, under the management of Mr. Carl Brenner, is a service organization responsible primarily to the Site Survey Panel and Safety Panel. Although located at LDGO (since 1975) to take advantage of access to the on-line digital geophysics data base and network, much of the material stored and prepared by the Data Bank is still in analog format. While there was some interest in competing for its management, the Committee also received strong recommendations from several respondents that it remain under the current management. Given the general satisfaction with its services and current heavy reliance upon experienced staff and hard copy holdings, the Committee concludes that this contract should not be competed now. As the second

phase of the renewal period approaches this conclusion should be revisited; a shift of venue will be much easier when more of the data base is in digital format.

b. Wireline Logging Services. There was extensive interest in competing for routine at-sea operations (logging with standard industrial tools and those owned by ODP), and in extending ODP down-hole measurements and analyses. Further, both the expressions of interest and our discussions with current operators indicated a need for a revised (integrated) on board data acquisition/computing environment and core-log correlation. Routine "at-sea logging operations" is clearly an area in which competition is desirable. Further, LDGO indicated that they did not desire to continue to manage at-sea logging and on-board processing during the renewal period, so that a new subcontract is perforce required.

Many of the expressions of interest were for services that are significantly beyond those currently provided as a part of the ODP program. Examples include wide band ship to shore data links, a significantly expanded shoreside analytical network (equivalent to that described in the LDGO "Blue Book" circulated prior to the January meeting), and routine hydrogeology experiments and vertical seismic profiles. The breadth of interest in such activities convinced the Committee that expanded down-hole measurements and analyses will be increasingly important components of operations during the renewal period, and that if funding to support such activities is available there are many excellent ideas to be considered. Selection among such alternatives obviously is beyond the charter of this Ad-Hoc Committee. It is properly the responsibility of standing committees. A scientific screening and prioritization of these new suggestions, balanced by budgetary considerations, is required before any competitive process can be considered. We do note that funding of any of these activities should involve new participants in providing contractual services to ODP.

The expressions of interest and our discussions revealed another area of concern, namely the orderly development of new borehole measurement tools. As discussed further below, our general concern over engineering development applies to both of the current major JOI subcontracts and represents what the Committee considers to be a significant deficiency. The existing LDGO contract (and Policy Manual description thereof) specifies only customized state-of-the-art "oil industry" logging plus operation of certain designated special purpose research tools. It makes no provision for tool development or assistance with third party wireline tools. By default, however, and by virtue of LDGO's at-sea responsibility (from section 3 of the same Manual) for the safety and compatibility of wireline tool operations, LDGO has assumed the role of the program's borehole measurement "Development Center". The Committee believes this ad-hoc situation should be contractually rectified during the renewal period, and that properly staffed and reviewed engineering development is required by ODP. We discuss this further in our comments on the TAMU contract.

Overall then, we conclude that the Wireline Logging Services contract must be completely restructured for the renewal period, and that there are four issues that must be addressed: "Standard" logging and on-board processing, integration of the logging and other shipboard computing and data management services, expansion of downhole measurements and analysis, and establishment of a more rigorous development environment.

c. Science Operator. While there was considerable interest by many respondees in competing for major portions of the current Science Operator contract, there also was general consensus that TAMU and its principle subcontractor SEDCO-FOREX should continue to manage and run the JOIDES RESOLUTION drilling operations through the first renewal phase. The quality of the current program, and the favorable day-rates available through 1998 via the TAMU subcontract, strongly argue against perturbing current arrangements. (During our visit, Dr. Rabinowitz notified the Committee that they had completed negotiations with SEDCO for an extension of these same day rates through 2003.) Since neither TAMU nor any other participant is interested solely in the purely mechanistic aspects of the project, and since many functions in the current contract are inextricably tied to management of the drilling operations, any competitive offering must carefully balance risk versus benefit. Indeed, during our visit TAMU stressed that communications and close liaison among the various element managers have been critical to their excellent and cost effective performance to date. The Committee concurs but believes, nevertheless, that several steps can be taken to increase international participation.

First, an expansion of repository space will be required to accommodate cores collected during the coming years. The refrigerated repository at LDGO is nearly full; and while there is adjacent expansion space, it would require a significant capital investment to move existing open stores and refrigerate it. TAMU has suggested that repositories be established in Europe and the western Pacific, and several respondees expressed interest in this part of the operations. Since some facility expansion is necessary in any event, this is a natural candidate for competition. This should occur quickly to ensure that any additional repository space is ready for cores from upcoming Atlantic legs. The Committee did find the current curation and repository services to be very well run, and believes that any additional repositories should be managed under the same basic arrangements as currently exist, namely under subcontract to TAMU. This approach will maintain consistency while encouraging broader access.

Second, the Committee believes that scientific and technical staffing of the JOIDES RESOLUTION should remain the responsibility of TAMU as the Science Operator. Although there was some interest by other ODP members in performing these functions, they are both very tightly tied to the drilling aspects of the program, and also are perhaps the single most important 'value-added' aspect of drillship management. We doubt that TAMU would be willing to manage the project should this aspect of the program leave

College Station. The Committee did note that there is currently minimal international staff at TAMU (roughly 6 out of 150 total), but believes that steps far short of competition can remedy this deficiency (and that competition in itself would not fix it).

Logistic support and development engineering are two other functions inextricably linked to drillship management. Not surprisingly, no one beside the Science Operator was interested in performing the logistic support function, although there was interest in providing supplies and services. Currently, only subcontracts and requisitions above $25K U.S. apiece (the level for which JOI approval is needed) are proferred internationally. The Committee believes that several actions can be taken to significantly increase international participation in this area.

Many respondees expressed interest in engineering. As is the case with down-hole measurements, there appear to be many excellent ideas in the community. We do not believe the program currently is well suited to evaluate these, or to implement them if and when desirable and fundable. TAMU's development engineering group is tightly targeted on DCS and other PCOM prioritized issues, and there is no engineering advisory structure chartered to consider, discuss, and evaluate new technological offerings. The current TAMU organization is fully capable of managing ongoing developments, and it is clear that responsibility for safety, system engineering, and compatibility of on-board and below-hull activity must remain with the Science Operator. However, we believe that changes are necessary to increase international participation and to seriously explore advanced technologies and alternate approaches to meeting science needs. While we do not expect that enhanced engineering activities will significantly influence JOIDES RESOLUTION drilling operations in the next year or two, they are very important to developing -- and gaining confidence in -- the stated objective of a broader suite of bottom penetration opportunities (shallow water, ice, deep drilling, fractured hard rock, etc.) during the first phase of the renewal period, and vital if the second phase (post-1998) is to include significantly enhanced drilling capabilities (whether or not on the current primary platform). As with Wireline Logging Operations, the Committee found advanced engineering, and exploration and management of new innovative third party developments, to be perhaps the weakest elements of the current program.

There was also much interest expressed in competing for computing and data management services. Further, changes in the shipboard computing and data management environment are required. First, as noted above, we have concluded that computer support for Wireline Logging needs to be integrated with the rest of the on-board suite, both for efficiency and to help with core-log integration. Second, there is a widely recognized need for improved ship-shore communications (TAMU intends to install an INTERNET connection aboard JOIDES RESOLUTION as of Leg 143). Third, we envision that with an improved data management capability it will be possible both to speed production of Volume A reports and to issue significant portions of them on CD ROM or other digital

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format, eliminating much of the current analog material and reproduction/photographic effort.

Of most significance, however, is the need for a major overhaul of the shipboard computer system. While this Committee was conducting its review, the Data Handling Working Group met in Toronto on 5 and 6 March and recommended the development of a "new fully integrated ODP Data Handling System" (Appendix G). We quote from their introduction:

> "Changes are urgently required to the shipboard computer system on the JOIDES RESOLUTION. The changes are needed because the work of the ship-board scientist during legs is being seriously hampered by the difficulty of retrieving data relating to the current leg, and by a lack of sophisticated computing resources to manipulate that data. The integration of the increasing amount of logging results with core data is also essentially impossible within the confines of the present shipboard computing environment. Ship to shore data communications are poor, making 'real-time' shore-based interaction with ongoing drilling difficult. Changes are also needed to allow the storage and organization of the greatly increased amount of numerical data being generated on legs. The presently installed VMS-based S1032 database system is totally inadequate for this task and unless changes are made there is a grave danger of ODP being unable to rationally archive shipboard data for post-cruise and subsequent study. Current methods for disseminating ODP data to the wider shore-based community also need improvement."

Subsequently, PCOM considered the DHWG report during its April meeting in Corvallis, OR, and adopted the following motion:

> "PCOM endorses the DHWG recommendations as contained in their minutes of March 5-6, 1992, and requests of I. Gibson a list of possible candidates for a steering group that will continue to work with TAMU on this issue. TAMU and the steering committee should jointly prepare a report for PCOM outlining the likely costs and implementation schedule of the DHWG. This report should be presented at the August PCOM meeting. Motion: Lewis; Second: Kidd; Approved: 16-0-0-1."

Clearly then, changes to the onboard computing and data management system will occur; at issue are affordability and procedure. PCOM's action essentially recommends that TAMU implement the changes through subcontract, and that TAMU and the to-be-formed Data Handling Steering Group (DHSG) survey outside interest and investigate cost and schedule.

During our visit, TAMU repeatedly stressed to the Committee the vital importance of close communication among computing, data management, and publication functions. Indeed, to further improve this they plan to reorganize by putting "Data Bases" and "Computer Services" groups -- now reporting respectively to Science Operations and Science Service (see Appendix C) -- under a single manager (new position).

While we agree with TAMU (and PCOM) that the computing, data management, and publication functions are inextricably linked with each other, we did not see them as tightly tied to the remaining operational tasks; and given the significant international interest in participating in these aspects of the program, the Committee concludes that they can and should be offered for competition as a package. TAMU, obviously, should be encouraged to offer their own refined approaches in this process, and teaming should be encouraged. The ongoing work of TAMU and the DHSG as approved by PCOM should assist in defining the competitive package.

In summary, we conclude that TAMU should remain the Science Operator for the first phase of the renewal period, but that steps can and should be taken to expand international participation in curation, staffing, supplies and services, engineering, and data management, without excessively perturbing the current effective managerial structure.

RECOMMENDATIONS (1993-1998)

Based upon the above conclusions and findings, the Committee recommends the following nine actions.

a. Repositories: TAMU should retain responsibility for curation and repositories throughout the renewal period. TAMU should recommend to JOI the least-cost procedure (and associated policy) for expanding facilities adequately to curate and manage cores collected during the renewal period. TAMU's procedure in accomplishing this task should include solicitation of offerings from interested partners. TAMU's first priority should be to provide adequate facilities to curate cores from upcoming Atlantic legs.

Discussion: Existing repositories are well managed, and to maintain continuity and conformance to uniform standards TAMU should continue to have the responsibility for all ODP core curation. A new facility is needed to handle cores from upcoming legs. At issue is both cost, which must be minimized; and policy, i.e. striking a balance between broadened participation and centralized storage. TAMU has the necessary expertise to estimate the amount of core storage required, and since any new repository will be operated -- as are current ones -- under subcontract to TAMU (if our recommendation is accepted), they should have the responsibility for recommending alternatives. Reasonably quick action is necessary to ensure that new repository space is ready to accommodate upcoming Atlantic Ocean legs.

Since both policy and cost issues are involved, we concluded that TAMU should be free to conduct informal discussions and evaluations rather than simply mandating that they issue an RFP in accordance with their normal purchasing procedures. Some degree of haste is in order for upcoming Atlantic legs because of the lead time required to prepare new space. Expansion of facilities for Pacific and other cores is a matter of less urgency, but when it is required the cost/policy balance established by Atlantic expansion should be maintained.

b. Wireline Logging: JOI should immediately offer for international competition among ODP members the at-sea aspects of wire-line logging, to include operation of specified standard and special purpose research tools (an industrial suite, and the set of ODP-owned mature tools), and on-board data quality control and preliminary log analysis, to include assistance in core-log correlation (see ODP Policy Manual Sections 3.19 and 3.20).

Discussion: Since LDGO does not desire to continue providing this service beyond September 1993, a new performer must be found. Because several qualified members expressed specific interest, a competition is appropriate. Criteria for selection should include cost, demonstrated experience, and qualifications of key personnel. JOI should obtain assistance from DMP in evaluating responses.

Our recommendation deletes from the suggested competition the computer operations, shore analysis, and implicit responsibilities for tool development, which are present in the current LDGO subcontract. Each of these should be handled separately, as described below. While an alternative to our recommendation would be to include some or all of these elements of work in this offering, we believe that routine at-sea logging is a well-defined and separable task for which a new performer must be found, and that the other operations require a different approach.

As an alternative to a direct competition from JOI, the responsibility for Wireline Logging could be assigned to TAMU, and TAMU then be directed to run a competition through its normal purchasing procedures. This has the clear advantage of assigning overall responsibility for all below-hull operations to a single contractor, which could yield improved efficiency, safety, and control of the engineering and development environment. Despite these advantages, the Committee recommended retaining separate subcontracts from JOI because TAMU expressed interest in performing Wireline Logging themselves. Should this change and TAMU decide not to compete for logging and on-board log processing, we believe that the program would benefit from TAMU management of this shipboard service.

c. Log Analysis: PCOM should solicit suggestions and, with the assistance of the Downhole Measurement Panel, recommend the type, amount, and timeliness of analysis to be routinely performed. With IHP recommendations on data management procedures and

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BCOM advice on the impact of anticipated costs, JOI can then determine whether to conduct a competition or extend the current contract with LDGO and have them arrange for partner participation.

Discussion: LDGO proposed a significant extension of logging and the establishment of an ODP Data Net prior to the January EXCOM, as part of their FY 93-96 Program Plan. Their composite response to the Committee's request included a slightly modified version of this plan. Other partners also were interested in performing analysis services, either for standard or expanded downhole measurements.

Clearly, in this case the science community must determine what services it needs and wants, and the program must balance such needs versus costs and alternatives. When significant changes are suggested, as in LDGO's proposed network, they must be processed through the science advisory committee structure (and evaluated for impact by BCOM) before they are brought to EXCOM. Since considerable work in defining the proposed expanded approach has already been accomplished, it should not be an extensively long or difficult task for PCOM to determine what extended services if any the science community needs. Once this has been accomplished and costs have been assessed, JOI can decide how to ensure broad participation in providing the desired product. The Committee simply believes that the science screening and cost/benefit analysis processes must occur before proceeding to competitive procurement. We also note that any proposed shoreside logging analysis network must merge with the overall shipboard computing and data management system discussed in recommendation d. below, provide access to analytical results to scientists in accordance with existing agreements, and prepare input to Volume A in formats recommended by IHP and as specified by the computing and data management network contractor (see d. below).

The Committee notes that at their April 1992 meeting, PCOM supported the concept of a data net "to improve real-time core-log integration and data reduction, interpretation, archiving and dissemination." What is needed now is to move beyond the concept to the establishment of a plan that is acceptable to the community and affordable. This will require, first, critical review and recommendations from DMP to establish community requirements for routine analysis and data management; and, second, interaction with IHP to ensure consistency of data management procedures throughout the program (see d. below). The Committee believes that it is timely to conduct these studies, but notes that this initiative must proceed in parallel with, or better integrated with, plans for modification of the on-board computation and data management network. We also strongly recommend that the routine logging and shoreside log analysis tasks be clearly separated from engineering, development, and extended downhole measurements.

One concern with this approach is the need for continuity in routine log analysis. If the recommended studies are completed expeditiously, it may be possible to compete shorebased log analysis simultaneously with on-board logging (item b.). If not, provision

must be made for continuity of service, presumably via further extension of LDGO's contract.

d. Computing and Data Management Network: JOI should seek formal expressions of interest in providing and operating a basic ODP "Data Management System." This system should include an integrated shipboard computing environment servicing all science operations, on-board data analysis and data bases, and both on board and shorebased aspects of data correlation, archival, and publication. Based upon the responses, JOI can then determine if competition is appropriate and whether the contract for this major program component should be managed directly by JOI or by the Science Operator.

Discussion: Many international participants expressed interest in performing parts of this operation. In addition, as described above DHWG has recommended a significant change to the shipboard computer system, and wireline logging computers should be integrated with the rest of the on-board suite and operated by a single contractor. We therefore believe that significant changes to current practice are required and competition is warranted. We were concerned however that the continuity of data management from initial acquisition through publication of Volume A -- a factor that was stressed by TAMU -- not be disrupted. Such continuity will become even more important in the future as we move toward publication and distribution of larger portions of each leg's initial volume in digital format (the Committee recognizes that this is an assumption on its part, but notes that available technology could both reduce costs and provide much of Volume A data in a more usable format and recommends that IHP consider this suggestion). Consequently, we recommend that this entire aspect of ODP operations -- management of the data from acquisition through publication, then archiving -- should be managed through a single subcontract.

We suggest an interim phase prior to formal competition to allow for formation of joint ventures. No one partner or group of partners suggested operations in the manner which we propose, so that there is considerable opportunity for teaming. A second reason for an interim phase is to allow the science advisory structure and JOI time to extend the work of DHWG as necessary to match this recommendation (e.g., all on-board computers managed by a single operator vice separate wireline and science suites, and increased digitization of Volume A). Many of those who expressed interest (before the DHWG report) had other suggestions, including for example different hardware/software suites and wideband ship to shore data links, and these options should be considered during the process of developing the precise task package to be competed. As with the other offerings for services beyond what is currently performed, cost-benefit trades must be conducted and a competition should be for a set of basic tasks (with add-ons permitted if appropriate) rather than encouraging offers of a-priori unaffordable services.

The Committee notes that there are several alternatives to this recommendation. The simplest is

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Alt. A: Leave science computer operations and data management as part of the TAMU Science Operator Contract, add responsibility for wireline logging computers and for upgrades as recommended by the Science Advisory Committees, and require TAMU to compete the upgrades or significant parts thereof.

This alternative meets our criterion of continuity and on-board systems integration. It provides for incremental growth and change through recommendations from the science advisory structure. It is compatible with the PCOM April decision re the DHWG report. It simply restricts the breadth of competition. (We assume that if our primary recommendation was accepted, TAMU would compete -- alone or as part of a joint venture -- to continue to perform these functions.)

Alt. B: Compete on-board computing (including wireline logging computers) and data management services only.

TAMU has recognized the need for single point supervision of these functions by its planned reorganization. Two partners (both U.S.) expressed interest in changing and managing the shipboard computing environment, and others were interested in portions of these operations. Under this alternative, responsibility for data management ashore and publications would rest with other contractors. The hand-off would occur either physically, or electronically once data reaches designated shore receiving stations (to then be distributed via an ODP data net, for example, if one was implemented). This alternative has the advantages of competition (and thus, ostensibly, improved services) but breaks the continuity of the data stream. This certainly is manageable but not, in our opinion, desirable. This alternative would benefit from the same science/budget review and system functional description as our principal recommendation, to preclude the strong possibility of unaffordable offerings. Another, simpler approach is to specify a fixed cost for the service, run a formal competition, and select the winner based on quality (a special committee or representatives from non-competing institutions would assist JOI in this task). This approach is feasible for this alternative since competition will likely be among single institutions vice teams.

Alt. C: Any of the above alternatives (principal or A or B), with the additional responsibility of developing a dedicated shore-based ODP Data Network to improve accessibility of all digital data and operational/analytical interaction among partners.

The concept of an ODP data network has been quite well received. While it was initially suggested in the context of logging analysis only, it should be equally applicable to other digitized ODP data, and speed the elimination of residual analog data bases. Indeed if any electronic network is to be implemented (to be recommended by PCOM as described above), whether or not a ship-to-shore wide band data link is included (our opinion is that this is too high cost to be justified by scientific gain), we strongly recommend it be done in this fashion.

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If this alternative is pursued, the logging analysis contractor(s) would then interact over the overall network that connected all partners, rather than establishing and operating their own among a much more constrained set of participants. Again, we stress that the two-phase approach to this issue not only allows but encourages partnering; and the more contractually "seamless" the overall ODP "data management system" is, the better it will functionally operate.

e. Extended Downhole Measurements: PCOM, with the assistance of the Downhole Measurement Panel, should determine which -- if any -- additional downhole measurements should be conducted as a routine ODP service (i.e. supported with comingled funds), and assess costs. If additional services are desired, BCOM should review the cost increases, evaluate potential offsets, and recommend programmatic changes to EXCOM. At this point, depending upon the nature of the experiments and which portion of routine operations (i.e., drillstring, wireline, or other below-hull) is involved, a procurement procedure (preferably a subcontract from the Science or Wireline Logging Operator) can be selected.

Discussion: Several ODP partners recommended that new or additional (mature or proven) downhole measurements be performed on a routine basis. Hydrogeology, VSP, and downhole tools for measurement ahead of the bit are examples. All of these are valuable measurements, but all are new services which will cost money and, in the absence of funding growth, displace some aspect of the ongoing program. Consequently these suggestions must pass through scientific and budget review before implementation. The Committee believes that in any instance where more than one participant is capable of performing a desired service (e.g. VSP), a competitive procurement process should be employed to select the vendor. This is at least as important for services as it is for supplies (see comments below, item h.), if international participation is to be encouraged.

f. Engineering and Development Environment: TEDCOM should be reconstituted and chartered, as a parallel to PCOM, to be responsible to EXCOM for (1) overall supervision of the development procedures for and suitability of new drilling and downhole instruments and techniques, (2) assessing the suitability of alternate platforms for use in the first renewal phase, and (3) assessing and recommending technologies for use in the post-98 time frame. The service panel structure should be modified, or expanded, and charged to meet specialty needs of the reconstituted TEDCOM.

Discussion: As noted above, there is a very significant contrast in the program between the broad and innovative approach to new scientific ideas, and the much more restricted approach to technology. Effectively, TEDCOM now acts as an advisory structure to TAMU's Development Engineering group and there is no formal structure for development of third-party tools. We reiterate our belief that the program suffers from these deficiencies and suggest that the appropriate first step in resolving them is to implement an advisory structure parallel to that in science. This group -- comprising

representatives of the partners with interest and expertise in engineering development, would have among its initial tasks the responsibility to review, and recommend changes to, the current development management structure. Of most immediate concern are the establishment of improved procedures for development and monitoring of third-party tools, and an assessment of progress with and alternatives to the DCS.

Quite obviously the drilling and logging capabilities of JOIDES RESOLUTION and any alternate platforms used by ODP are of fundamental importance to the program. While there is a prioritized list of technical drilling enhancements being adequately pursued under that current structure, we found -- as discussed above -- a quite narrow set of vendors, and of even more concern a lack of ability within the program to stimulate and evaluate ideas for new drilling and analytical techniques, and to ensure orderly pursuit of the range of technologies needed for improved access to the ocean floor. Compared to the science side of our house, the engineering side is haphazard and restricted.

Our recommendation was stimulated not only by our concern with the existing (rather, only partially existing) current development environment, but also by the breadth of ideas suggested in response to our request for expressions of interest. We were also impressed with the suite of techniques that have recently become accessible to ODP through the reentry of Russia. The program lacks the structure needed to elicit such ideas and alternative engineering approaches routinely and to evaluate them, let alone to ensure efficient development and integration of new tools. In sorting through a variety of approaches, we concluded that resolution of these deficiencies should start with the establishment of a competent and representative advisory structure that parallels -- and calls upon for assistance -- the science structure. DMP, for example, could not only advise PCOM upon which measurements were needed for selected legs, but advise a reconstituted TEDCOM on requirements for advanced downhole sampling techniques.

The Committee does note that the Science Operator must retain system engineering responsibility for all on-board equipment, and in particular for all below-hull operations. TAMU currently fulfills this responsibility for everything except tools attached to the logging wire, which are the responsibility of LDGO and which -- at sea -- fall under the aegis of the Operations Superintendent. Under our proposed contracting scheme the new Logging Contractor will retain LDGO's responsibility for standard and specified mature downhole tools. We stress the absence of a rigorous borehole measurement development group from our current (and proposed) contractual structure, and would urge that the reconstituted TEDCOM consider on a priority basis the means by which one should be established. We note that this will be a cost item, but one that must be borne for both safety and improved operations.

The Committee believes that the recommended rechartering of TEDCOM is a matter of first-order importance to the overall program. We note that since TEDCOM would have to meet more frequently then at present, a significantly enhanced range of

technical skills and responsibilities is required, and TEDCOM would report to EXCOM, some added costs are involved and the partners may wish to reevaluate the nature of their representation on the Committee.

g. TAMU Staffing: ODP Council should discuss procedures for enhancing international employment opportunities at TAMU, particularly for Staff Scientists and Marine Technicians.

Discussion: It would be desirable routinely to have as much international participation on the Science Operator's staff as possible. TAMU recently modified its regulations so that seagoing staff on A/B rotation can, after an initial training period, live wherever they desire. This change should increase the appeal of marine technician jobs to non-U.S. personnel.

On the other hand, TAMU staff jobs are offered as permanent employment and U.S. immigration laws require issue of a labor condition attestation and application for a temporary, non-immigrant H-1 visa (implying non-permanence) before an overseas hire is permitted. This process often is complicated. Further, while "permanent" TAMU employment may be attractive to some international participants, it perhaps discourages others who would see a temporary opportunity to work at sea with ODP -- with an assured or at least assisted ability to return to their home institutions -- as more conducive to their career plans.

Since some potential changes may require waivers to, or at least a detailed knowledge of regulations, this is an appropriate topic for the Council to consider. The Committee does urge EXCOM to support a target of 3 (of 7) Staff Scientists and 10 (of 25) Marine Technicians (for a minimum 3 to 4 year terms) as an appropriate and reasonable minimum for international staffing, and to suggest to the Council that a variety of opportunities for employment be made available to encourage international participation. We further recommend that JOI, Inc. investigate the options for exceptions to current U.S. employment restrictions for ODP.

h. Supplies and Services: JOI and TAMU should modify the current requirement for international tender to encourage more international sourcing.

Discussion: Currently, TAMU offers only procurements for items in excess of $25K apiece to international competition. We believe that this limit is too high, and that a much greater diversity and number of requests for supplies and services of all types could be opened up. The expressions of interest included items as diverse as hardware and software for core-log data integration, shallow water drilling platforms, and printing, which could be competed within the existing structure. It might, for example, be possible to meet some of the recommended staffing changes by offering procurement requests for Marine Technician services.

This is an action that in our opinion can, and should, be accommodated with no change in structure or increase in staffing. The key is to adopt an innovative and proactive stance in expanding the concept and operation of an international ODP vendor community. International sourcing should be the routine practice, not the exception.

We note that commensurate with JOI and TAMU actions to increase international offerings, it will be increasingly important for partner representatives to ensure that providers of supplies and services in their countries are aware of the opportunities and encouraged to participate.

i. Alternate Platforms: Requirements and opportunities for use of drilling platforms other than JOIDES RESOLUTION, and for support platforms as may be required (e.g., ice guard) for the 1993-1998 period, should be established by PCOM. TEDCOM should assess the technical and engineering suitability of available platforms to meet scientific objectives. Services of such alternate platforms should be contracted for (on a competitive or sole source basis as appropriate) by TAMU.

Discussion: The program is fully capable of using alternate platforms during the 1993-1998 period. We merely suggest a separation of science (requirements) and engineering functions between PCOM and the (recommended) reconstituted TEDCOM, and use of the available contractual process at TAMU for procurement.

The Committee notes that there are many platforms available worldwide which are equally or more suitable (or less costly) than JOIDES RESOLUTION for some scientific drilling tasks. Shallow water, atoll, and Arctic drilling are examples. Some were mentioned in the expressions of interest, and we encountered others during our visits. Given available funding, use of such platforms would help meet the objective of enhanced international participation with continued excellence and cost effectiveness during the 1993-1998 period.

To assist in defining alternate platform use, we recommend that PCOM prepare (and periodically update) a prioritized list of opportunities (scientific objectives, locations, tasks). ODP partners could then identify specific platforms which could be reviewed by TEDCOM so that a vendor list could be prepared and provided to the Science Operator. While this step is not essential, we believe it would help identify opportunities and assist BCOM and JOIDES in planning a rational and cost effective program.

FINDINGS AND CONCLUSIONS (POST-1998)

Although there was some general interest in competing for the Science Operator Subcontract in the post-1998 time frame, only TAMU -- which as noted above has obtained an extension of day rates with SEDCO-FOREX -- offered a specific proposition, namely to continue with JOIDES RESOLUTION as the primary ODP platform. TAMU did remind

the Committee that the ship will need a few-months yard period and several million dollars of refit work upon conclusion of the first renewal phase. Knowledge that the ship will continue to be available, at projectable costs, provides the program a sound basis for consideration of alternatives.

Two other elements of the responses provided stimulation for consideration of post-98 operations. The first is the potential availability of platforms which can extend or expand operations on a routine but part-time basis. The NEREIS proposal and KNORR are two examples. There also is the opportunity suggested by the Nansen Arctic Drilling Group for merger of interest and activities if, and when, NAD programs evolve. Further, it is probable that both the Russian and Japanese scientific drillships will be in operation (and potentially available for some ODP work) within the 1998-2003 period. These possibilities, plus extension of the alternate platform concept which we recommend be aggressively pursued in 1993-1998, offer the possibility that ODP could define a program in which there was no one dedicated ODP drillship, but rather that a variety of services and platforms, each tailored to particular scientific objectives, would be used.

The second element, if our recommendation f. above is adopted, is the pursuit of a much more active technological development program during the 1993-1998 time period. Either through evaluation of commercial activities or through ODP support of specific developments as recommended by a reconstituted TEDCOM, the program itself may well define new capabilities that could be implemented after 1998. Again, depending on the technologies involved, these could either be on board a dedicated ship like JOIDES RESOLUTION or obtained from other providers.

Essentially, the Committee notes that the possibility of maintaining JOIDES RESOLUTION through 2003 provides a sound basis for planning and evaluating alternatives, and urges the establishment of the recharted TEDCOM as described above as the best immediate action for setting out and defining such alternatives. We also believe that the key to a coherent international drilling effort is unity and continuity of the planning process and advisory structure. We recognize that there will be other national and perhaps international groups that will determine the primary activities of vessels such as the NEREIS proposal (EC) or KNORR (UNOLS); but to the degree that they participate in ODP, their activities should be directed to meet COSOD objectives as planned and controlled by the ODP advisory and management structure. It is entirely possible to have a coherent program that routinely uses multiple platforms and techniques; the Committee believes that this is desirable, even necessary, to meet scientific objectives. On the contrary, it is not possible to maintain such a coherent effort if the unity of the planning and program management process is disassembled.

Respectfully Submitted

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REVIEW OF RUSSIAN DRILLING AND CORING TECHNOLOGY

Ocean Drilling Program
27 April 1992

INTRODUCTION

Various types of Russian drilling and coring technologies and equipment are being offered for use by ODP. The following is a brief overview of this technology which was reviewed during a recent trip to Moscow by an ODP engineering representative.

BARE ROCK SPUDDING

A method of bare rock spudding is proposed. The proposal calls for coring 100+ m "exploratory" holes, without a guide base or template, to gain information for determining placement of a hard rock guide base for a permanent reentry installation. The proposal requires the use of a 5 3/4" ID drill string. A special bottom hole assembly (BHA) which allows for latching-in of various retrievable coring and drilling assemblies must be used. A retractable reamer is also part of the special BHA. The proposed bare rock spudding procedures are as follows.

1. To obtain 100% core coverage, i.e., from sea floor to final TD, a single 8 - 10 m deep, pilot or "A" hole is cored. A retrievable downhole motor (turbodrill) attached to a 5 1/4" OD core barrel is deployed through the drill string and latched into the BHA. A TV camera lowered down the outside of the drill string is used to locate a depression or some type of natural anchoring point for the bit during spud-in. Two different equipment configurations and procedures are proposed for spudding.

   A. Option 1:
   A retrievable downhole motor with rigidly attached core barrel is deployed through the drill string and latched into the BHA. The retrievable downhole motor/core barrel assembly is spaced out such that the core barrel extends beyond the end of the BHA the length of the core to be taken (8 - 10 m). The drill string heave compensator and draw works are then used to control weight on bit and advancement during spud-in and coring.

   B. Option 2:
   A non-pressure balanced bumper sub is placed between the retrievable downhole motor and core barrel. The assembly is deployed through the drill string and latched into the BHA. The drill string heave compensator is only used to keep the BHA resting on the sea floor. The non-pressure compensated bumper sub acts as a thruster to hydraulically control weight on bit and advancement during spud-in and coring.

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2. Once the "A" hole has been cored, the drill string is picked up so the retrievable downhole motor/core barrel assembly can be mechanically unlatched and retrieved. A retractable tri-cone bit, attached to a retrievable downhole motor is then deployed through the drill string, hydraulically opened and latched into the BHA. A "B" hole is then spudded in the same manor as the "A" hole, i.e., find a depression or other natural anchoring point and spud without any form of template. The retractable bit is a roller cone type bit and rotated at 200 - 300 rpm. The "B" hole is drilled to a TD corresponding to the "A" hole TD. 8 to 10 m depth is a minimum required for the BHA to heave in without coming out of the hole while retrieving the retrievable downhole motor/retractable bit and deploying the retrievable downhole motor/core barrel.

3. While maintaining the heaving BHA in the "B" hole, the retrievable downhole motor/retractable bit assembly is retrieved. The retrievable downhole motor/core barrel assembly is then deployed through the drill string and latched into the BHA. Using either method 1A or 1B described above the next core is cut.

4. After cutting the core, the retrievable downhole motor/core barrel assembly is retrieved, the retractable reamer is opened and the hole is reamed to TD. It may be possible to ream the hole while coring.

5. The alternating coring - reaming operations are then carried out to final TD. Core barrel extension tubes, placed between the retrievable downhole motor and the core barrel, are available. Use of the extension tubes allows for advancing the pilot hole without having to ream the main hole behind it.

Comments:

The bare rock spudding proposal is not intended as a replacement for the DCS if deep 100+ m penetration of hard, fractured, rock is the goal. It is intended to be used in coring exploratory holes for use in determining where to establish permanent, hard rock guide base, reentry sites.

In general, the proposal is not much different than what ODP has already attempted on Legs 106 and 109, i.e., unsupported spudding with downhole motors. However, the use of a retrievable downhole motor/core barrel assembly may have some merit. The equipment offered is very similar to ODP's Motor Driven Core Barrel (MDCB) only much larger and therefore more powerful and robust, a distinct advantage! Use of the retrievable downhole motor/core barrel system in place of the XCB and RCB has the potential to increase overall core recovery.

Testing of the retrievable downhole motor/core barrel system can be carried out fairly easily if ODP is willing to round trip for single cores. For example, a special BHA with a retrievable downhole motor/core barrel assembly in place, could be deployed with ODP's current drill string in Hole 504B. A few round trip, single core, runs could be made for comparison to coring techniques used in the hole in the past. In this way a direct comparison can be made.

SEDIMENT - BASEMENT CORING

A piston core barrel, compatible with the special BHA described above is available. In coring sediments and highly indurated material or basement rock, the following procedure is proposed.

1. Spud the hole with the piston core barrel in the conventional manor.

2. Continue piston coring to refusal while reaming the hole.

3. Change to the retrievable downhole motor/core barrel method as described above and continue the hole to final TD.

Comments:

The existing piston core barrel is very similar to ODP's APC. The retrievable downhole motor/core barrel system has the potential to increase core recovery over the existing ODP XCB and RCB systems.

5 3/4" ID DRILL STRING

Most of the proposed equipment requires the use of a 5 3/4" ID drill string. The Russians are currently using a 6 5/8" OD X 5 3/4" flush ID aluminum drill string with steel tool joints. This drill string has been offered to ODP. An assortment of drill collars, sub, etc., have also been offered.

Comments:

Reference "GENERAL COMMENTS" below.

REAMERS

Several types of conventional reamers are offered.

Comments:

Although ODP uses few reamers in it's operation, a review of the proposed reamers and cost should be undertaken.

DRILL-IN CASING

The retractable bit proposed for use by ODP was originally designed for drilling-in casing strings. The bit is a tri-cone, full face, bit run on a retrievable downhole motor. No retractable coring bit exists.

The retractable bit system could be modified to replace the existing ODP Drill-In Casing System. The assembly would require a BHA which includes a retractable reamer and is compatible with the motor/retractable bit and motor/coring systems. The casing string would be latched into the BHA and hung off just above the reamer. The retrievable downhole motor/retractable bit would be used to drill a pilot hole ahead of the casing. The retractable reamer would be used to open the hole for the casing string. Once the casing string was drilled into position, the retrievable downhole motor/retractable bit would be retrieved, the retractable reamer retracted and the casing string unlatched from the BHA. The hole could then be advanced using the retrievable downhole motor coring system, leaving the casing string behind.

Comments:

The advantage to this system over the current ODP Drill-In Casing system is the casing string is not used to transmit torque in reaming the hole. This technique makes for a much more robust system than the current ODP system.

It may be possible to scale down the retractable reamer and incorporate it into ODP's existing DIC system without having to go to the larger diameter drill pipe.

DRILLING/CORING BITS

Several types and designs of both drilling and coring bits are offered. The types range from roller cone to PDC to diamond. All the bits offered can be produced in the specific sizes and connections required by ODP.

Comments:

Some of the bits offered are of unique design and may be worthy of testing.

HYDRAULIC DRILLING JAR

A hydraulic drilling jar is offered. The hydraulic jar is similar in design to hydraulic drilling jars currently available on the US market.

Comments:

The hydraulic drilling jar offered does not present any benefit to ODP other than possibly low initial cost. The reasoning for this is all hydraulic drilling jars are plagued with seal problems and are expensive as well as time consuming to repair. The Russian hydraulic jar does not appear to be an exception.

FIBER OPTIC CABLE

Fiber optic cable technology is offered. A fiber optic cable currently in use has the following specifications.

Out Side Diameter = 12.2 mm (0.480 in)
Breaking Strength = 60 kN (13,500 lb)
Maximum Working Load = 45 kN (10,000 lb)
Maximum working Hydrostatic Pressure = 50 MPa (7,250 psi)
Operating Temperature Range = -60°C to 180°C
Minimum Bending Radius = 300 mm (11.811 in)
Rewind Cycles > 1000
Number of Optical Fibers = 3
Number of Conductors = 1
Attenuation = 4 dB max @ 0.85 km
Weight = 430 kg/km (290 lb/Mft)
Available Length = 1 - 6 km

The fiber optic cable can be manufactured in any configuration required, within reason.

Comments:

Dr. Dorman at Woods Hole is investigating the quality of this fiber optic cable for use in various Woods Hole projects. His results should be available to ODP in the future.

BOREHOLE WALL GLAZING

This technology is strictly in the laboratory phase at the present time but is interesting. It involves pumping 50 - 200 kwt into a heating element which is in contact with the borehole wall. The borehole wall is heated to 1000°C to 1800°C, fusing it into a near impermeable crust which stabilizes the hole. The amount of energy required is lithology dependent.

Comments:

This technology is not yet available and was presented only as insight into what technology is currently being pursued.

DRILL STRING VIBRATION ANALYSIS

This technology is in the field trial phase at the present time. Essentially it involves recording the "vibration spectrum" of the drill string at the top drive. Individual vibration inputs

from rig pumps, reamers, downhole motors, bits, lithology changes, etc., can be observed in the spectrum. By studying the vibration spectrum, bit and downhole motor performance can be observed as well as lithology changes. By correlating the lithology changes with depth this information can be used to form a better picture of where in the coring sequence individual pieces of core may have come from.

Comments:

This technology is still in its infancy but may be useful to ODP when perfected.

RETRIEVABLE DOWNHOLE MOTORS AND CORE BARRELS

Three retrievable downhole motors are being offered and are briefly described below.

Turbodrill TRV-198T
RPM = 14.1 rps (846 rpm)
Torque = 2.0 kNm (1,500 ft-lb)

Turbodrill with reduction gear TRV-142
RPM = 7.8 rps (468 rpm), 1.6 rps (96 rpm)
Torque = 2.0 kNm (1,500 ft-lb), 5.0 kNm (3,675 ft-lb)

Positive Displacement Motor DVO-142
RPM = 3.2 rps (192 RPM)
Torque = 2.5 kNm (1,838 ft-lb)

Several core barrels are offered ranging from piston core barrels to standard wireline rotary type core barrels to integral bit (standard oil field type) core barrels to integral retrievable downhole motor/core barrel assemblies. An assortment of standard core catchers is also available for the various core barrels.

Comments:

The proposed motors and core barrels are standard off-the-self equipment. Redesign or reconfiguration for ODP is a distinct possibility if required.

Before utilizing these downhole motors, an in-depth review of performance including maintenance records and required support personal should be undertaken.

TESTING FACILITIES

Use of the Scientific Research Drilling Techniques Institutes (VNIIBT) testing facility is also part of the proposal. The facility has two test holes complete with derricks, draw works, mud pumps and data acquisition systems. The facility also includes threaded connection testing equipment, in-house machine shop, downhole motor test stands and other associated equipment. The

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facility has the capability of test drilling various rock samples and is in the process of erecting a new bit testing facility which can carry out tests in the horizontal or vertical position.

Comments:

It was reported that the testing facility had been employed by KTB. Contact with KTB should be made regarding their experience in using the facility.

FABRICATION FACILITIES

Use of the VNIIBT manufacturing facility for producing ODP equipment to ODP drawing specifications is offered. The manufacturing facility included a small foundry, heat treat shop, machine shop, assembly area, rubber molding shop and plastic molding shop.

Comments:

Since part of the manufacturing facility was idle due to lack of raw materials timely delivery may be a problem, at least at the present time. Proof of an "in place" quality assurance program should be required before considering fabricating ODP equipment at the facility. This should be standard practice with all vendors.

GENERAL COMMENTS

Much of the proposed equipment can not be scaled down to be compatible with the current 4 1/8" ID ODP drill string. In any case, if it were scaled down, it would offer little advantage over existing ODP equipment. For instance, the retrievable downhole motors would lose their increased power advantage over the motors currently used by ODP and the core barrels would lose their increased robustness advantage.

Converting to the larger diameter pipe would open doors to developing new coring systems and improving existing ODP coring systems which can not be accomplished with the existing drill string. However, the change would obsolete virtually every piece of existing ODP coring equipment from the rig floor to the repository. The pipe racker and pipe handling systems would have to be modified or replaced to handle the larger diameter pipe. All existing ODP coring tools would have to be up-scaled to be compatible. If the current core diameter is not maintained the on board core laboratory and land based core repositories will also be affected.

Since on board space limitations negate both drill strings and associated drilling/coring systems being carried at the same time, commitment to the proposed equipment by ODP is virtually an all or nothing proposition. The modifications required to change over to the larger diameter drill string are certainly "do-able" but at a high cost in both dollars and man-hours.

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31 March 1992

RECEIVED
APR 0 3 1992
Ans'd.....

Mr. William Collins
SOPAC Techsec
Private Mail Bag, GPO
Suva, Fiji Islands

Dear Bill:

I'm not really the right person to start with regarding the non-U.S. liaison position because I don't get involved until late in the process (I called John Malpas to tell him this). Since the position was requested by the non-U.S. partners, it is up to them, naturally, to do the selection. I don't know the details, but I assume it requires someone with a candidate in mind to do some telephoning, faxing, etc. to the partners and see if they can agree on a person. If they can't agree or there are candidates with widely varying skills and background, the PCOM Chair select (Brian Lewis in this case) or I may get involved. My involvement only comes from the fact that the person is formally a JOI (not, for example, University of Washington) employee. Rather than suit me, the non-U.S. representative should suit the non-U.S. partners and the PCOM chair with whom he or she will be working very closely. My real role seems to be the nag who harasses everybody every two years to get the selection made. Frankly, it surprises me that the non-U.S. partners always press for internationalizing the program but continually neglect to give this important portion the attention it deserves. The selection should have been made by now so that the designee could attend the spring PCOM meeting—only two weeks away.

Robin Smith left me a note (she's on leave at the moment) informing me of your interest and putting in some very nice words of support. I hope we can work this out.

Sincerely,

Tom

Dr. Thomas E. Pyle
Vice President and Director,
Ocean Drilling Programs

cc: J. Malpas
B. Lewis
A. Maxwell
J. Austin

Canadian Secretariat and Canada/Australia Consortium for the
Ocean Drilling Program

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RECEIVED
APR 0 1 1992
Ans'd.....

April 1, 1992

TO: M.B. Cita-Sironi
H. Jenkyns
Y. Lancelot
A.A. Sharaskin
A. Taira
U. Von Rad

FROM: John Malpas

Canada would like to make a nomination for the non-US Liaison position at the JOIDES Office in Washington commencing this October. We would like to nominate Mr. Bill Collins who has had considerable experience with both the Ocean Drilling Program and international marine programs. He is known to the present PCOM Chair and seems eminently suitable for the position. He was the original editor of the *Resolution Report*, the Canadian newsletter, which most of you are familiar with. I would like your support in putting forward his nomination on behalf of the international community. Do you see any problem with this? Could you FAX me back if you are in agreement. I believe most international partners have now been represented by the non-US Liaison position except for Canada/Australia, Japan and Russia.

A brief c.v. for Mr. Collins. He is a marine geologist with considerable research expertise having worked for the last two years with the South Pacific Applied Geoscience Commission on marine problems in the Pacific. He has run his own research programs and is the author of a number of papers. He worked as the Associate Director of the Canadian Secretariat for ODP for two years. He holds a B.Sc. degree in marine geology. Bill was the Publicity/Advertising Manager for the Geological Association of Canada and therefore has a background in organization and distribution of scientific data. He has expressed a strong interest in this position in Washington.

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Canadian Participation in the Ocean Drilling Program is funded by the Geological Survey of Canada, the Natural Sciences and Engineering Research Council of Canada, the Department of Fisheries and Oceans and Industry, Science and Technology Canada

I will need to know your reply as soon as possible in order that, if all are in agreement, we can ask Jamie Austin to invite him to the Spring PCOM meeting.

Yours sincerely,

John Malpas
Director

JM/nf

cc: Jamie Austin

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April 14, 1992

To: JOIDES Executive Committee

From: D. James Baker DJB

Subject: Meeting Date Changes

For a variety of reasons, the date of the EXCOM meeting in January 1993 in Australia has been changed to January 27 and 28. Dave Falvey has kindly agreed to arrange for a set of scientific lectures to be given on January 26. Dave suggests that participants plan to arrive on the weekend in order to be over jet lag by the time of the meeting. Further details will be sent later. We're looking forward to seeing you then.

cc: EXCOM Liaisons

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5 May 1992

Dr. Arthur E. Maxwell
Institute for Geophysics
The University of Texas at Austin
8701 N. MoPac Expressway
Austin, TX 78759-8397

Dear Art:

I enclose a slightly revised (following suggestions of Tom Pyle) copy of the background statement, proposed terms of reference and proposed membership of the Advisory Structure Review Committee that we agreed to at the JOI Board of Governors meeting last month.

Tom points out that Tony Watts has been in the U.K. for some time now, and that Paul Worthington is a Panel Chair. He suggests Peter Lysne from Sandia as an expert in both logging and drilling techniques. I have made these changes in the proposal, and therefore this is the one that should be included in the EXCOM papers for consideration at the June meeting.

Yours sincerely,

Jim

D. James Baker
President

cc: E. Frieman
T. Pyle

5/4/92

ODP Advisory Structure Review Committee

1. BACKGROUND

The overall advisory structure for ocean drilling has remained essentially the same since the beginning of the Deep Sea Drilling Project in 1968: an Executive Committee and a Planning Committee. There has been evolution in the operation of these bodies, however, as the Planning Committee has begun a transition from a mixed regional and thematic advisory mode to a fully thematic mode. Detailed Planning Groups have been established to present syntheses of high priority proposals and optimal drilling strategies. This transition seems to be working well. The Executive Committee has established a Budget Committee which has proved to be an effective means for developing final recommendations on yearly budgets.

The terms of reference for the JOIDES Executive Committee are outlined in Annex B of the JOI By-Laws (attached). The terms of reference also explicitly establish as Planning Committee and a Budget Committee. As we plan to continue the program beyond 1993, it is prudent to review the overall advisory structure to ensure that the program has in place a process that meets community needs and that is efficient, cost-effective, and representative.

Two recent reviews of the program have supported the need for an evaluation of the advisory structure. The Third Performance Evaluation Committee (PEC III) noted that over the next few years, fundamental changes in the international program of ocean drilling appear to be inevitable. For this reason, and because the JOIDES advisory structure has never been reviewed, PEC III strongly recommended the appointment of a panel to provide a comprehensive review and evaluation of the planning and advisory structure. The EXCOM Ad Hoc Committee on Long-Term Organization and Management of ODP also recommended that the advisory structure be reviewed.

ESTABLISHMENT, SCHEDULE, AND FUNDING FOR COMMITTEE WORK

Following those recommendations, at its meeting in Bonn in January 1992 the EXCOM recommended that an Advisory Structure Review Committee be established in the spring of 1992. The Committee is to carry out its work during the rest of 1992 and report to the EXCOM at the January 1993 meeting in Australia.

Following the precedent of the Performance Evaluation Committee, it is proposed that the funding for the Committee's work come from co-mingled funds. The following pages provide a proposed terms of reference and membership for the Advisory Structure Review Committee.

ODP ADVISORY STRUCTURE REVIEW COMMITTEE
PROPOSED TERMS OF REFERENCE

1. The Committee will review and evaluate the current JOIDES science advisory structure of the Ocean Drilling Program. It will review the terms of reference and assess the effectiveness of the overall structure and the value of each of the existing bodies. The Committee may recommend changes, strengthening of groups, and deletion of groups, and will provide justification for its recommendations for change.

2. The Committee will, in its deliberations, take into account the recommendations of the PEC III that "the achievement of COSOD thematic objectives can best be accomplished by changing the long range planning function toward a more focused and active formulation of the drilling program" and that "the thematic panels be given increased responsibility in this direction, rather than simply reacting to proposals".

3. The Committee will also take into account the suggestions of the EXCOM Ad Hoc Committee on Long-Term Organization and Management of ODP, in particular,

"Should the PCOM be reconstituted with membership of eminent non-proponent geoscientists (including the Chairs of Service Panels) and with its Terms of Reference changed to promote stronger pursuit of paramount themes, and to encourage proactive invitation, combinations, or variation of proposals? There appears to be considerable support in EXCOM for the Thematic Panels to take a much more proactive role in promoting their themes. It has been suggested that the structure and terms of reference of Thematic Panels should be examined with the aim of better reflecting the major themes of future science."

The Committee is invited to comment on the Ad Hoc Committee's suggestion that "For the longer term, the achievement of a multi-vessel program will mark a new era in ocean drilling that may require further modification of the advisory and operational structure."

4. The Committee will focus on the operation of the program in the first five years of renewal beyond 1993. The Committee may look further into the future as it deems appropriate.

5. The Committee membership will consist of six members, three from the U.S. and three from non-U.S. partner countries. Members will be experts in the fields of science, engineering, and management. The Committee will be appointed by the Chair of EXCOM in consultation with the Chair of PCOM and the President of JOI.

5/4/92

6. The Committee will carry out its work during 1992 and report its findings and recommendations to EXCOM at its meeting in Australia in January 1993.

Possible members (not yet contacted)

It is proposed that there be six members of the committee; three from the U.S. and three from non–U.S. partners.

U.S. nominees:

C. Drake (U.S.) (possible chair)
J. Kennett (U.S.)
J. Morgan (U.S.) (possible chair)
F. Richter (U.S.)
D. Scholl (U.S.)
A. Watts (U.S.)

Non–U.S. nominees:

N. Nasu (Japan)
R. Price (Canada)
W. Schlager (Netherlands) (possible chair)
E. Seibold (Germany)
B. Biju–Duval (France)
P. Worthington (U.K.)

UNIVERSITY OF WASHINGTON CORRESPONDENCE

May 21, 1992

TO: J. Austin
FAX# (512) 471-0999

RECEIVED
MAY 2 1 1992
Ans'd.....

FROM: Brian T.R. Lewis

Subject: PCOM comments on Briden report

The attached report reflects the imput of M. Langseth, J. Malpas & B. Lewis.

Dear EXCOM:

At our April 21-23 PCOM meeting, we reviewed the Briden report and discussed the recommendations made and the actions taken by EXCOM. Our immediate reaction is to applaud the lucid and comprehensive perspective on the scientific ocean drilling program that the Briden report presents. The report appears to have provided sufficient impetus to the Executive Committee for it to undertake a review of the management structure and program operations. Scientific ocean drilling is indeed approaching a watershed, and it is entirely appropriate to undertake such a review. EXCOM's prompt action is in line with this. However, the report also motivated EXCOM to implement, immediately, certain actions which we believe were made without due consideration. More importantly, without full scientific consideration.

The main theme of the Briden report is increased internationalization of the program. The report recommends a number of steps that might lead to an increased role for non-US partners in funding, planning and management, with a concomitant decrease in the role of the United States JOI institutions. Most of these steps will clearly have a profound impact in the commitment of all partners. As a consequence, it is crucial that the recommendations be fully understood and fully evaluated at all levels in the program especially in light of potential benefits or possible detriments to the science that the science is designed to investigate.

We note that the Briden committee in the first instance was set up to examine possible modes of managing a program involving multiple platforms. That is, to respond to French, Russian and Japanese intentions to build deep-ocean drillships that might be used in such a program. This was probably appropriate for a one-man committee, but somehow the mandate became much more. As such, the report reflects one man's view of what a future internationalized ocean drilling program might look like. It has many singular perspectives that could be considered inappropriate. It likely requires extensive revision.

ODP has always been consultative at all levels in the past; however, in this case there was an apparent lack of consultation with other elements of ODP, particularly in that there was insufficient time for international partners to fully discuss the implications

of the report. We therefore request that the Executive Committee ask the full planning structure to comment on the implications of the Briden recommendations before any further actions are taken. It is in this light that we express concern over the establishment of the Dorman committee and its precipitate actions without due consultation. IOMDS members, in particular some non-US partners, were put in an awkward position having to reply to apparently formal RFP's with neither the necessary background data, time, nor any clear statement as to what was intended by these RFP's. We viewed this as a wholly unacceptable way to determine serious interest in participation in the management and implementations of the program.

Our recommendation then is an immediate discussion of the Briden report and the implications of the Dorman committee by each of the partners in ODP and all elements of the planning and advisory structure. Each should provide a considered position paper on the Briden recommendations. These position papers should discuss the implications of the internationalization for science planning, service panels and the science operator. PCOM is concerned that we are being rushed into a major program restructuring perhaps because of the necessity of dealing with one or two changes in subcontracts, but most definitely without due consultation.

PCOM

Ocean Drilling Program Sets FY 1993 Schedule

At its December 1991 meeting in Austin, Tex., the Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES) Planning Committee of the Ocean Drilling Program (ODP) established its plan for fiscal year 1993 in association with chairpersons of ODP's scientific advisory panel. The budget covers late November 1992 through late November 1993.

ODP, successor to the Deep Sea Drilling Project (DSDP) and the International Phase of Ocean Drilling, is a consortium of countries led by the United States with a broad mandate to conduct scientific drilling in the world's ocean basins. ODP reviews and ranks drilling programs proposed by an international community of Earth scientists according to priorities established by ODP's Long Range Plan. Using those rankings as primary input, the planning committee has placed six 56-day drilling legs on the fiscal 1993 schedule, beginning with Leg 147. ODP's Long Range Plan is available from the Joint Oceanographic Institutions, Inc., in Washington, D.C., and from JOIDES thematic panels.

The new schedule is generally consistent with long-term ODP planning, which has stipulated that operations of the ODP drill ship *JOIDES Resolution* will be concentrated north of the equator until approximately April 1994 in the Atlantic Ocean, the Gulf of Mexico, and in the Caribbean, Mediterranean, Norwegian, and Labrador seas. Each program to be held in 1993 is briefly summarized below and in Figure 1 to alert the international Earth science community to future opportunities for direct participation aboard the drill ship and to facilitate planning for necessary ancillary activities, such as geophysical and geological surveys in the vicinity of prospective drill sites.

• Leg 147 (late November 1992 to late January 1993): Scientific drilling operations at the beginning of fiscal 1993 will attempt to sample lower oceanic crust and, if possible, sample upper mantle at Hess Deep, where 1.2 m.y. East Pacific Rise (EPR) crust has been exposed in the wake of a propagating rift. Hess Deep represents an inaugural program to implement a general strategy of drilling offset sections of oceanic crust exposed at "tectonic windows." The ultimate goal is to put together composite sections that are representative of crustal generation processes at both fast- and slow-spreading mid-ocean ridges. These sections can then be compared with both ophiolites on land and with results from existing efforts to sample oceanic lithosphere in-situ, like Hole 504B (see below).

• Leg 148 (late January to late March 1993): At present, Leg 148 is scheduled as a further engineering test of ODP's evolving Diamond Coring System (DCS) capability, a follow-up to earlier tests conducted during legs 124 (Western Pacific), 132 (Western Pacific), and 142 (EPR at 9°30′ N). The DCS is ODP's adaptation of mining technology to the marine realm, with the goal of sampling more effectively several geological environments difficult to penetrate in the oceans: young fractured basalts, chert/chalk sequences, and shallow-water carbonates. Leading candidates for the North Atlantic DCS test site are the carbonate-capped transverse ridge at the Vema Fracture Zone and the Mid-Atlantic Ridge–Kane Fracture Zone area.

• If for some reason the DCS does not perform as anticipated at EPR (Leg 142), the planning committee has stipulated that Leg 148 will be a return to Hole 504B on the southern flank of the Costa Rica Rift. Hole 504B is the deepest hole ever drilled into oceanic crust—2000.4 m below seafloor—and is the only hole thus far that unequivocally penetrates through extrusive lavas into underlying sheeted dikes that constitute the foundation of upper oceanic crust formed at a mid-ocean ridge. ODP anticipates that one more leg of drilling at Hole 504B will recover the contact between sheeted dikes and gabbros believed to represent the transition from seismic layer 2 to layer 3 in the world's oceans. The planning committee will make the final decision on Leg 148 at its next meeting, which is to be held in April 1992.

• Leg 149 (late March to late May 1993): NARM / n.v. I will conduct a drilling transect across the Iberian Abyssal Plain (IAP) to

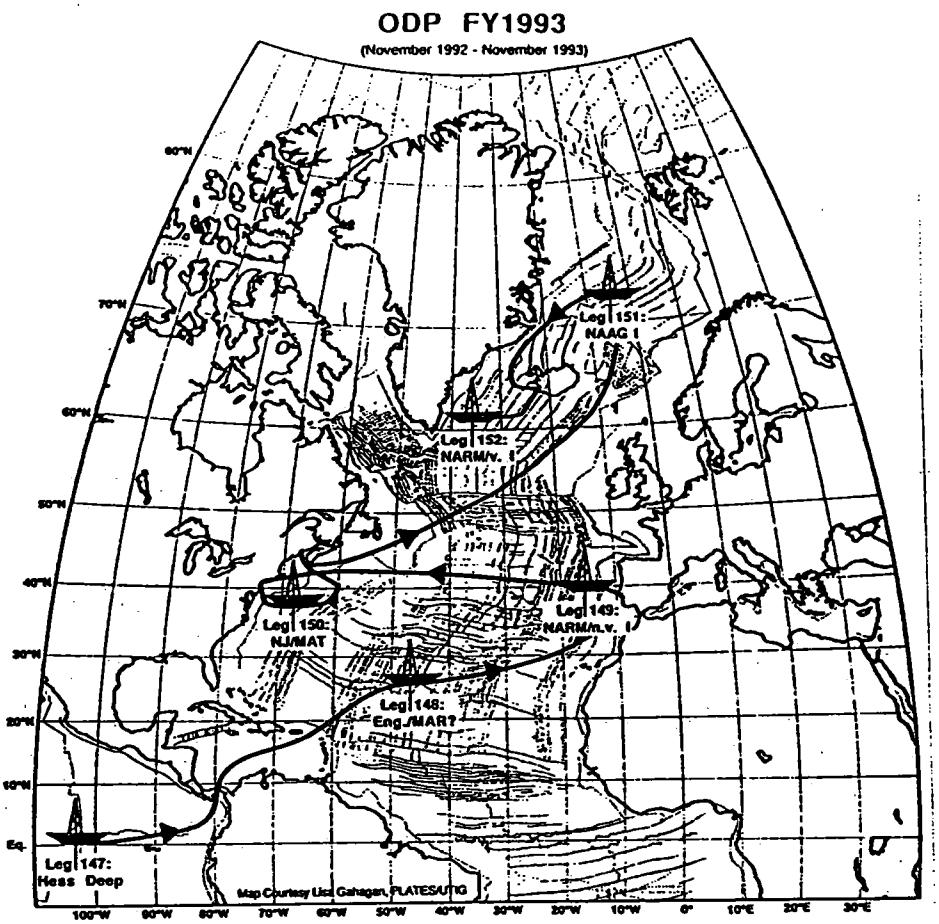
Ocean Drilling (cont. on page 118)

Ocean Drilling (cont. from page 117)

study a suspected nonvolcanic, oceanic-continental crustal transition there. This is the first leg of a long-term drilling initiative on both nonvolcanic and volcanic passive continental margins mandated by a committee of specialists convened by the planning committee called the North Atlantic Rifted Margins Detailed Planning Group (NARM-DPG). The NARM-DPG distilled a coherent, multi-leg drilling program for JOIDES from more than a dozen highly ranked proposals considering this general class of geologic problem. A follow-up NARM/nonvolcanic effort anticipated for fiscal 1994 will consider the conjugate margin to the IAP, the northern Newfoundland Basin off eastern Canada.

• Leg 150 (late May to late July 1993): The New Jersey sea-level/Middle Atlantic Transect program, NJ/MAT, will drill a series of holes across the shelf and slope off New Jersey to estimate amplitudes of late Paleogene–early Neogene fluctuations of relative sea-level and to assess their effects on development of the margin's seismic stratigraphy. NJ/MAT is intended to document the response of one passive continental margin's sedimentation to glacio-eustatic changes during the late Oligocene to Miocene "ice-house world." This program should complement upcoming ODP drilling on Western Pacific atolls and guyots (legs 143 and 144), as both are parts of a global strategy to study the history of sea-level changes in order to understand their potential future impact on human activities.

• Leg 151 (late July to late September 1993): The Noth Atlantic–Arctic Gateway I program will consider paleoceanographic history of the North Atlantic–Arctic Gateway, deep water connections between the Arctic Ocean and northernmost North Atlantic basins. Once again, the planning committee has relied on a group of experts, the NAAG-DPG, to crystallize a two-leg effort from several highly ranked proposals. The second leg of NAAG may be scheduled in fiscal 1995. For NAAG I, which will take the drill ship to the fringes of pack ice in the near-Arctic, *JOIDES Resolution* will require an ice-support vessel similar to the one used for ODP



Magnetic anomaly map of the North Atlantic on which the ODP fiscal 1993 schedule has been superimposed. Designated ports-of-call are preliminary, and ship track and drilling locations are schematic. For more detailed information, contact the JOIDES Office. A key to drilling program abbreviations can be found in the accompanying text. Courtesy of L. Gahagan, Project PLATES, University of Texas Institute for Geophysics.

drilling in the Weddell Sea during ODP Leg 113.

• Leg 152 (late September to late November 1993): NARM / v. I will begin a systematic examination of volcanic passive margins which characterize the northeastern North Atlantic. As mandated by the NARM-DPG and endorsed by the planning committee, Leg 152 will drill two holes on the seaward-dipping reflector sequence (SDRS) off southeast Greenland in an attempt to understand its geologic evolution and relationship to Iceland plume volcanism. SDRSs are located at margins worldwide and have already been shown to be volcanic expressions by previous scientific ocean drilling programs, such as DSDP Leg 81, Rockall Plateau and ODP Leg 104 V ring Plateau. Future NARM / volcanic legs may address similar phenomena recognized along other parts of the southeast Greenland margin and off Norway.

Opportunities exist for shipboard participation in all of these legs. Interested scientists are urged to contact ODP headquarters at Texas A&M University, 1000 Discovery Dr., College Station, TX 77840; tel. 409-845-2673. For additional information on the fiscal 1993 schedule, contact the JOIDES Office, University of Texas Institute for Geophysics, 8701 North Mopac Blvd., Austin, TX 78759-8397; tel. 512-471-0471.—*James A. Austin, Jr., JOIDES Planning Committee*

19 May 1992

TO: JOIDES EXECUTIVE AND PLANNING COMMITTEES

This leg summary was received on 19 May 1992 from Co-Chief Scientists Will Sager and Edward Winterer, aboard *JOIDES Resolution*, Leg 143.

Drilling on Leg 143 occurred at four localities: the summits of two guyots in the Mid-Pacific Mountains (Sites 865, 866, and 867/868); the archipelagic apron adjacent to a paired atoll-guyot in the Marshall Islands (Site 869); and within the lagoon of a modern Marshall Islands atoll (Site 870). Sites 865 and 866 were situated in the lagoons of two drowned atolls (Allison and "Huevo"), principally to examine the history of carbonate platform initiation, growth, and drowning, to test the hypothesis that the guyot summit had been emergent and karsted, and to study the effects, timing, and magnitude of sea level fluctuations. Site 867/868 was drilled on the perimeter mound surrounding the summit of "Huevo" Guyot, to study the drowning and karsting of what was thought to be a Cretaceous perimeter reef. Site 869, on the archipelagic apron of Pikinni Atoll and Wodejebato Guyot, was drilled to provide a record of volcanism and shallow-water carbonate platform development inferred from turbidites shed from the atoll-guyot pair. Site 870 was an engineering test of shallow-water drilling in the lagoon of a modern atoll, Anewetak.

Deep holes drilled into the ancient lagoons of Allison (Hole 865A) and "Huevo" (Site 866A) guyots yielded thick, shallow-water limestone caps that record the history of the guyots from submergence of the volcanic pedestal through the final drowning of the carbonate platform. Though different in detail, both guyots had complex vertical trajectories. The carbonate platform on "Huevo" formed in the Barremian, on a rapidly subsiding edifice, and quickly accumulated about 1350 m of sediments by early to middle Aptian time. After a hiatus of perhaps up to 15 m.y., approximately 370 m of late Albian sediments accumulated above. In contrast, the entire 731-m shallow-water limestone section capping Allison Guyot accumulated during its rapid subsidence in the late Albian. Despite the rapid subsidence, the lagoonal facies on both guyots indicate very shallow water throughout most of the carbonate platform histories. Additionally, the limestone sections are characterized by meter-scale facies shifts that imply short-period cycles of emergence and submergence. Both guyot summits show evidence of emergence and karsting at some time after the late Albian. The magnitude of the emergence was at least 160 m. Holes drilled into and next to the perimeter mound surrounding the summit of "Huevo" Guyot failed to find the expected abundant reefal material, suggesting that these mounds, commonly noted on guyot profiles, are not necessarily reefs like those on Cenozoic atolls. These results point out important differences between Cenozoic and Cretaceous atolls - the latter were probably more like open platforms with low relief. An entirely different history was recorded at Site 869, on the apron adjacent to the atoll-guyot pair, Pikinni and Wodejebato. At this site surprisingly little shallow-water debris was encountered. Instead, an abundance of volcaniclastics were delivered to the site by turbidity currents, grain flows, and mass flows through the late Cenomanian to Maestrichtian. Especially large influxes of such material in the Cenomanian and Campanian imply volcanic episodes on the nearby volcanic edifice(s). A few shallow-water fragments and bits of coalified plant remains in Cenomanian layers imply the existence of nearby land and shallow carbonate shoals at that time. In the Cenozoic, volcanism ceased and pelagic sedimentation prevailed, interrupted by turbidity currents carrying debris from shallow water.

James F. Allan
Assistant Manager
Science Operations

pc: NSF Managers, JOI Office,
JOIDES Panel Chairmen & Office
National ODP Offices

Active ODP proposals, April 1992

JOIDES Office, UTIG

(Sorted by "Date received")

Ref.No	Received	Key Title	Contact	Re-viewed	* Globally Ranked	Drilled or Scheduled
265----	12/04/86	Woodlark Basin	Scott, S.D.		1992, 1991	
319----	02/21/89	Extinct hydroth.	Jonasson, I.R.	•		
322----	03/28/89	Ontong Java Kimberl.	Nixon, P.H.	•		
142-Rev	04/05/89	Ontong Java Plateau	Mayer, L.		1991	Leg 130
324----	04/20/89	Med tectonic evol.	Cita-Sironi, M.B.	•		
325----	05/09/89	Endeavour Ridge	Johnson, H.P.		1992, 1991, 1990	
326----	05/11/89	NW Africa margin	Hinz, K.	•		
327----	05/24/89	Argentine cont. rise	Hinz, K.		1991	
329-Rev	07/14/89	Formation of Atlantic	Herbin, J.P.	•		
330----	07/17/89	Med. Ridge	Cita-Sironi, M.B.		1992, 1991	
331----	07/25/89	Aegir Ridge	Whitmarsh, R.B.	•		
333----	07/27/89	Cayman Trough	Mann, P.		1992, 1991, 1990	
337----	07/31/89	New Zealand sea level	Carter, R.M.		1992, 1991, 1990	
338----	08/03/89	Marion Pl. sea level	Pigram, C.J.		1992	
340----	08/07/89	N Australian margin	Symonds, P.		1991, 1990	
341----	08/08/89	E Canada Wisc. climate	Syvitski, J.P.M.	•		
343----	08/08/89	Caribbean crust	Mauffret, A.		1991, 1990	
344----	08/08/89	NW Atl JMQZ	Sheridan, R.E.	•		
345----	08/11/89	West Florida sea level	Joyce, J.E.		1992, 1991, 1990	
347----	08/15/89	South-eq. Atl. paleo.	Wefer, G.		1992, 1991, 1990	
351----	09/06/89	Bransfield Strait	Storey, B.C.	•		
352----	09/13/89	Mathematician Ridge	Stakes, D.S.	•		
353-Rev	09/13/89	Antarctic Peninsula	Barker, P.F.	•		
271-Rev2	09/22/89	California Current	Barron, J.A.		1990	
SR	10/30/89	Sedimented Ridges	Detrick, R.S.		1992, 1991, 1990	Leg 139
360----	12/06/89	Valu Fa hydro.	Von Stackelberg, U.		1992, 1991, 1990	
363----	01/18/90	GB-Iberia plume volc.	Tucholke, B.E.		1992, 1991	
364----	01/22/90	Sardinian-African Str.	Torelli, L.	•		
367----	02/07/90	S Australia margin	James, N.P.		1991	
368----	02/12/90	Hole 801C return	Larson, R.L.		1992, 1991, 1990	
370----	02/22/90	MAR magmatism	Dick, H.J.B.	•		
372----	02/26/90	N Atl. paleo.	Zahn, R.		1991	
373----	03/01/90	Site 505 Return	Zoback, M.D.		1991, 1990	
374----	03/06/90	Oceanographer FZ	Dick, H.J.B.		1992, 1991	
378-Rev	03/12/90	Barbados acc. prism	Westbrook, G.K.		1991, 1990	
379----	03/12/90	Med. drilling	Mascle, J.		1991	
381----	03/19/90	Argentina shelf/slope	Huber, B.T.	•		
383----	05/22/90	Aegean Sea	Kastens, K.A.	•		
265-Add	06/04/90	Woodlark Basin	Scott, S.D.		1992, 1991	
384-Rev	07/18/90	Caribbean crust	Mauffret, A.	•		
386-Rev	08/10/90	California Current	Lyle, M.		1992, 1991	
Cascadia	08/14/90	Cascadia margin	Cathles, L.M.		1992, 1991, 1990	Leg 146
355-Rev2	08/30/90	Gas hydrate	Von Huene, R.		1991	
387-Rev	09/04/90	Hess Deep	Gillis, K.		1992, 1991, 1990	Leg 147
Bering	09/07/90	Bering Sea history	CEPAC		1992, 1991, 1990	
388----	10/01/90	Ceara Rise	Curry, W.B.		1992, 1991	
345-Add	10/05/90	W Florida sea level	Joyce, J.E.		1992, 1991, 1990	
389----	10/29/90	SW Atl. traverse	Malmgren, B.A.	•		
362-Rev3	11/08/90	Chile Triple Junction	Cande, S.C.		1992, 1991, 1990	Leg 141
390----	11/12/90	Shirshov Ridge	Milanovsky, V.E.		1992, 1991	
391----	01/02/91	Med. sapropels	Zahn, R.		1992, 1991	
EPR	01/09/91	East Pacific Rise	Davis, E.E.		1992, 1991, 1990	Leg 142

IR In review (for fall 1992 meetings)

* No. of global ranks for 1990, 1991 and 1992, resp.: LITHP 15, 20, 15; OHP 12, 12, 14; SGPP 14, 20, 16; TECP 15, 20, 21.

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Active ODP proposals, April 1992

JOIDES Office, UTIG

(Sorted by "Date received")

Ref.No	Received	Key Title	Contact	Re-viewed	* Globally Ranked	Drilled or Scheduled
392----	01/29/91	Labrador Sea volc.	Larsen, H.C.		1991	
394----	02/04/91	N Atl. volc. margins	Kiørboe, L.V.		1991	
323-Rev	02/11/91	Alboran Sea/gateway	Comas, M.C.		1992, 1991, 1990	
395----	02/11/91	Volc. passive m. comp.	Boldreel, L.O.		1991	
363-Add	02/18/91	Grand Banks paleo.	Tucholke, B.E.		1992, 1991	
397----	02/20/91	N Atl. multiple rifting	Gudlaugsson, S.T.	•		
398----	02/22/91	Grand Banks paleo.	Piper, D.J.W.	•		
361-Rev	03/01/91	TAG hydro.	Thompson, G.		1992, 1991, 1990	
NAAG	04/11/91	N Atl./Arctic gateways	Ruddiman, W.F.		1992, 1991, 1990	Leg 151
356-Rev	05/01/91	NGS Paleo.	Smolka, P.P.	•		
399----	05/03/91	Alboran Sea evolution	Watts, A.B.		1992	
253-Rev	06/19/91	Pac. black shales	Sliter, W.V.		1992, 1991, 1990	
346-Rev2	08/14/91	E eq. Atl. transform	Mascle, J.		1992, 1991, 1990	
400----	09/03/91	Costa Rica acc. wedge	Silver, E.A.		1992	
401----	09/05/91	Jurassic Golf of Mexico	Buffler, R.T.	•		
388-Add	09/06/91	Ceara Rise	Curry, W.B.		1992, 1991	
369-Rev	09/09/91	MARK lithosphere	Casey, J.F.		1992, 1991, 1990	
402----	09/09/91	MAR basalts	Sobolev, A.V.	•		
330-Add2	09/10/91	Med. Ridge	Cita-Sironi, M.B.		1992, 1991	
NARM	09/10/91	N Atl. rifted margins	Larsen, H.C.		1992, 1991, 1990	Legs 149/152
404----	09/11/91	NW Atl. sed. drifts	Keigwin, L.D.		1992	
380-Rev2	09/12/91	VICAP, Gran Canaria	Bednarz, U.		1991	
391-Add	09/12/91	Med. sapropels	Zahn, R.		1992, 1991	
405----	09/12/91	Amazon fan	Flood, R.D.		1992	
369-Add	09/16/91	MARK lithosphere	Mevel, C.		1992, 1991, 1990	
376-Rev	09/16/91	Vema FZ: layer 2/3	Mevel, C.		1992, 1991, 1990	
406----	09/16/91	N Atl. climatic var.	Oppo, D.		1992	
407----	09/16/91	15°20'N shallow mantle	Dick, H.J.B.		1992	
408----	09/16/91	N Nicaragua Rise	Droxler, A.W.	•		
409----	10/04/91	Santa Barbara Basin	Kennett, J.P.		1992	
361-Add	10/25/91	TAG hydro.	Thompson, G.		1992, 1991, 1990	
410----	12/02/91	Deepening 504B	Erzinger, J.		1992	Leg 148
411----	12/09/91	Caribbean Basalt Prov.	Donnelly, T.W.		1992	
412----	01/28/92	Bahamas transect	Eberli, G.P.		1992	
354-Rev	01/30/92	Benguela Current	Wefer, G.		1992, 1991	
059-Rev3	01/30/92	MAP/Sed. instability	Weaver, P.P.E.		1992, 1991	
413----	02/03/92	Reykjanes Ridge	Murton, B.J.		1992	
414----	02/03/92	N Barbados Ridge	Moore, J.C.		1992	
415----	02/03/92	K/T-boundary, Caribb.	Sigurdsson, H.		1992	
403-Rev	02/03/92	KT bound., G/Mexico	Alvarez, W.		1992	
332-Rev3	02/04/92	Florida Escarpment	Paull, C.K.	•		
333-Add	02/04/92	Cayman Trough	Mann, P.	•	1992, 1991, 1990	
386-Rev2	02/10/92	California margin	Lyle, M.	IR	1992, 1991	
416----	03/11/92	Svalbard margin	Solheim, A.	IR		
365-Add2	03/20/92	N Atl. geothermal	Louden, K.E.	IR		

IR In review (for fall 1992 meetings)

* No. of global ranks for 1990, 1991 and 1992, resp.: LITHP 15, 20, 15; OHP 12, 12, 14; SGPP 14, 20, 16; TECP 15, 20, 21.

ODP OPERATIONS SCHEDULE

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Leg		Port of Origin†	Cruise Dates	Days at Sea	Estimated Days Transit/OnSite
144	Atolls & Guyots B	Majuro Atoll 20-24 May	25 May - 20 July 1992	56	12/44
145	North Pacific Transect	Yokohama 20-24 July	25 July - 21 September 1992	59	18/41
146	Cascadia	Victoria 21-25 September	26 September - 22 November 1992	57	6/51
147	Hess Deep	San Diego 22-26 November	27 November 1992 - 22 January 1993	56	14/42
148A	Hole 504B*	Panama 22-25 January	26 January - 23 February 1993	28	4/24
148B	Hole 504B*	⚓ Panama 23 February	24 February - 15 March 1993	19	4/15
148C	Transit	Panama Canal 15 March	15 March - 2 April 1993	18	18/0
149	Iberian Abyssal Plain	Lisbon 2-6 April	7 April - 29 May 1993	52	2/50
150	New Jersey Sea Level	Lisbon 29 May-2 June	3 June - 29 July 1993	56	16/40
151	Atlantic Arctic Gateways	St. John's 29 July-2 August	3 August - 28 Septemer 1993	56	14/42
152	East Greenland Margin	Reykjavik 28 Sept.-2 Oct.	3 October - 28 November 1993	56	

*Scientific Party on board for 148A&B. Sedco-Forex crew rotate on 23 February 1993

†Although 5 day port calls are generally scheduled, the ship sails when ready.

TJG?

Revised 27 April 1992